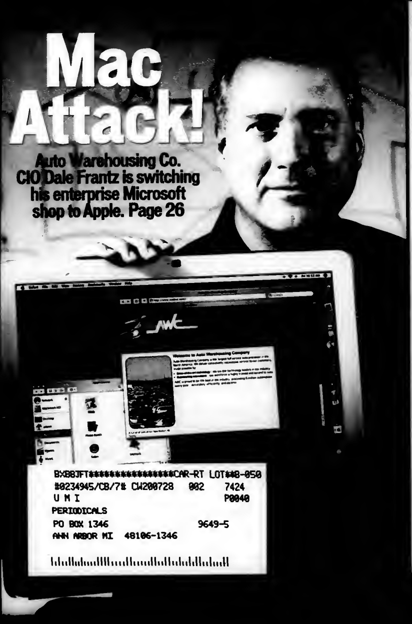
The Future Really Is Now: **Forecaster Paul Saffo says CIOs need to learn the tricks of his trade to see future opportunities.** PAGE 31

COMPUTERWORLD



Mac Attack!

Auto Warehousing Co. CIO Dale Frantz is switching his enterprise Microsoft shop to Apple. Page 26

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JULY 16, 2007
VOL. 41, NO. 29 $5/COPY

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The evolution of coding, from wires and switches to the death of "automatic programming." **PAGE 36**

Your potential. Our passion.

Microsoft

defeating skeletons. easy.

1. Pinch yourself; it's not a dream.
You're being chased by Skeletons down a long, dark hall. This is the stuff of nightmares, only in this case the hall leads to the lunch room and it's no nightmare; Skeletons really have attacked your office. Put aside fear and face the task at hand.

2. Sneak up and scare them.
Skeletons love scaring people, but why? Anyone that obsessed with scaring others is probably scared themselves. But of what? A psychologist might say the Skeletons fear exposure, for who is more exposed? Any psychologists out there?

3. Swing them around.
What's the matter, can't take a Skeleton? Once you get over the initial shock and fear, Skeletons don't really pose much of a threat. Sure they fight dirty, but you certainly have the weight advantage, and with even minimal effort you can pick him (or her) up and swing them around.

4. Use nondairy creamer.
Drinking milk builds strong bones, it's true. And a good calcium supplement is a must for women over 50, when the risk of osteoporosis can increase dramatically. By denying the Skeletons this important nutrient, you'll see them weaken and eventually crumble.

5. Put on a show.
It's one of the classic scenes in theater. Hamlet, the melancholy Dane, finds the skull of Yorick, his faithful servant, in the graveyard, and muses on the inevitability of death and loss. This is a big role for a Skeleton—use it as bait. Offer him the part, and simply keep the prop.

6. Destroy the dark crystal of Fabrikam.
What evil lies behind this attack? What unholy force animates them? It's likely the fabled dark crystal of Fabrikam has fallen into the hands of an enemy. Find the crystal at all costs, fling it into the fiery river at the heart of Bone Mountain, then sell the movie rights.

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Inside

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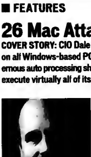
COVER STORY: CIO Dale Frantz (above) is pulling the plug on all Windows-based PCs in Auto Warehousing Co.'s cavernous auto processing shop and powering up Apple Macs to execute virtually all of its revenue-producing operations.



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Here's a look at the evolution of software coding, from the early days of wires and physical switches to the untimely death of "automatic programming."

COVER: PHOTOGRAPH BY KEITH BROFSKY

BREAK THE CYCLE. The HP BladeSystem c-Class, featuring efficient Dual-Core AMD Opteron™ processors, helps free I.T. from the cycle of server management. It's equipped with HP's exclusive Insight Control Linux Edition, a comprehensive blade management and deployment package built specifically for Linux. Manage multiple servers and infrastructures while automating routine tasks, giving you more time to spend on the tasks that really drive your business.

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This Week Online

Must-Have Windows Utilities For 20 Essential Tasks

SOFTWARE: Read about handy applications that will help you do your job and keep your PC humming happily. The lineup includes tools for file management, encryption, system maintenance and more. **computerworld.com/software**

Small, fast and full of features, the IrfanView image viewer enjoys a cult following.

What Search Engines Store About You

STORAGE: You might be surprised to learn what search engines such as Google, Yahoo and Microsoft Live Search record and retain in their vast data banks. **computerworld.com/storage**

Who Are Your Riskiest Vendors?

MANAGEMENT: Jay Cline has three simple steps to help companies assess the risks that their vendors and partners pose to their sensitive information. **computerworld.com/itmanagement**

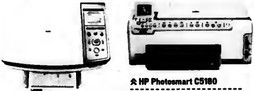
Blog Spotlight

You Get What You Pay For

Be careful who controls your Web domain. The city of Waltham, Mass., recently discovered what can go wrong when well-meaning volunteers have the keys to the Web site, blogs Mitch Betts. **computerworld.com/blogs/node/5806**

Ink Wars: Kodak vs. HP

HARDWARE: Kodak claims that low ink prices mean its new all-in-one printers will save you money in the long run. We pit the EasyShare 5300 against HP's Photosmart C5180 to see if those claims stand up. **computerworld.com/hardware**



⌃ HP Photosmart C5180

« Kodak EasyShare 5300

Get More Out of Your IT Career

CAREERS: Demonstrating an ongoing commitment to learning and a willingness to improve your interpersonal and business skills can help you to establish yourself as a leader, says columnist Katherine Spencer Lee. **computerworld.com/careers**

A Look at the Logs: What's Really There?

SECURITY: Sure, you know that paying attention to logs can give you a detailed – if sometimes cloudy – look at what's going on in your network. Anton Chuvakin suggests how to raise your monitoring game to "best practices" levels. **computerworld.com/security**

SHARK BAIT

PCs never crash at a convenient time – unless you're interviewing for a job. "Show, don't tell" was the motto for this enterprising pilot fish.

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EDITOR'S NOTE

Don Tennant

Tale of an IT Hero

WHEN DALE FRANTZ says that his massive migration from Microsoft Windows to the Apple platform isn't a vengeance case, believe him. Over the past few years, I've worked with Frantz closely enough to know not only that the CIO of Auto Warehousing Co. doesn't have a vengeful bone in his body, but also that he means what he says.

As Julia King reports in this week's cover story (page 26), the migration is being made because Frantz determined that by doing so, he can cut costs, improve system reliability and security, and provide expanded IT support services to his users. The decision to extricate himself from his total dependence on Microsoft was based on sound business and technology principles, not some mindless lust for retaliation.

On the other hand, don't believe for a nanosecond that Microsoft's extremely poor judgment in selecting AWC as a target in a software-licensing intimidation campaign, and Frantz's earnestness to demonstrate that Apple is a viable alternative to Microsoft in large companies, are unrelated. They are, in fact, inextricably linked.

Our involvement with this story began on May 2, 2006, when Frantz, a *Computerworld* Premier 100 IT Leader, e-mailed me to make me aware of an issue that had been brewing at AWC. He informed me that his company had been contacted by a Microsoft software asset management "engagement manager" who indicated that Microsoft had reason to believe AWC wasn't fully compliant with its software licenses. The manager suggested that the only way for Frantz to rectify the situation was to cooperate with a Microsoft-sponsored inventory of his installed software.

Over the next several weeks, we reported extensively on the AWC case, documenting Frantz's certainty that he was in fact properly licensed, as well as his refusal to be intimidated by a tactic that had the unmistakable smell of a dissembled Microsoft software asset management sales initiative. Nowhere was Frantz's resultant disenchantment with Microsoft better illustrated than in this response to the engagement manager:

When Frantz refused to buckle, Microsoft backed off. But the genie was out of the bottle.

"The thing that is really sad about this whole affair is that Auto Warehousing Company is virtually a dedicated Microsoft shop, due to my (prior) professional respect for your company. As I have spoken at global conferences and been quoted many times in the IT trade press, I have reinforced that AWC is a Microsoft shop and that we are proud of that fact. It is extremely unfortunate that it is now clear that your many detractors are actually the ones that are correct."

When Frantz refused to buckle, Microsoft backed off. But the genie was out of the bottle. Frantz and *Computerworld* were inundated with e-mails from readers who had been subjected to similar Microsoft strong-arm tactics but who never went public with their experiences. Most praised Frantz for having the guts to do so. Others wrote to say that if Microsoft ever tried such a gimmick with them, they'd immediately start shifting to an Apple or Linux alternative.

Of course, it's easy for all of us to say what we would do in a situation that requires immense courage and conviction. We like to think we know what we'd do. But the truth is, until we're actually staring the situation in the face, none of us really knows.

More to the point, it's easy to threaten a massive adoption of Apple systems as an alternative to Microsoft. But how many CIOs are willing to stake their reputations on an expansive proof-of-concept project to establish whether such a dramatic shift in a large organization is truly viable?

There may be a handful out there, but I only know of one. And I'm proud to know him. If you knew Dale Frantz, you would be, too. ■

Don Tennant *is editor in chief of* Computerworld. *Contact him at don_tennant@computerworld.com.*

RESPONSES TO:

YouTube Video Puts Sharp Focus On Tech Job Ads

June 28, 2007

My friend asked about a job listed on my current employer's external Web site. When I couldn't find it in the internal Web site, I asked HR. This is what they e-mailed back:

"The requisitions on the EXTERNAL Web site are for immigration purposes. They are NOT real reqs. Rather, it fulfills one of the requirements for the first part of the Green Card process to try to recruit minimally qualified U.S. workers. (We need to prove to the Dept. of Labor that we could not find minimally qualified U.S. workers.) They are only posted for 10 business days and are automatically taken down."

I was stunned.

■ Submitted by: *Anonymous*

Using the YouTube search query "Cohen Immigration" yields 8 relevant videos. The most frequently viewed video, developed by Kim Berry at the Programmer's Guild, had an amazing 177,711 views as of June 29, 2007 at 12:20 PM EDT (13 days after posting).

I believe the Cohen & Grigsby videos, which document the common and callous approach for employers to employ "fresh young (inexpensive) blood" and exclude experienced American citizen technical professionals, played a role in killing the Bush-Kennedy CIR, S. 1639 on June 28. Hats off to Lou Dobbs, Sue Kwon (KPIX TV-5) and Glen Beck for publicizing these videos.

Activists have worked hard to archive the Cohen & Grigsby YouTube videos on many computers across the U.S. Activists have also released an archive Web site under the "fair use" provisions of U.S. copyright law that includes copies of all 20 of these videos accompanied by background information. See the fictitious law firm, Lyre, Lyre, Pantz & Fier — Your source for cheaper humans at *www.lyrelyrepantzandfier.com.*

■ Submitted by: *Dr. Gene Nelson*

RESPONSES TO:

H-1B Video Shocker: 'Our Goal Is Clearly Not to Find a Qualified . . . U.S. Worker'

June 19, 2007

I confess. I once pushed these scams. I used to be in the sleazy tech recruiting racket, so I know this routine all too well. Back in the late 1990s to the early 2000s, I was a recruiter for two tech recruiting agencies in the Dallas area. There were and I'm sure still are several variations on the scam. But the most common stunt was to place the H-1B candidates with the clients and collect our fees for it. After that, if the clients wanted to sponsor those H-1B people for green cards, we'd collect resumes from citizen candidates and put them through the ordeal of the fake interviews in order to help the client comply with the immigration rules and regs. Often, the immigration attorneys who collected visa and green card processing fees were involved, just like in the video. Everyone profited, except of course the American candidates, who got screwed big time.

The motivation for the client was to lock in the workers at below-market rates while holding them prisoner to the green card process. The main motivation for us was to keep the clients happy in order to get repeat business, although occasionally we would collect some extra fees just for the interview scams.

I now have a job in IT product marketing instead of recruiting, and I sleep a whole lot better at night. Good luck to you guys.

■ Submitted by: *Ex-recruiter*

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Digest

EMC plans to announce upgrades to its full line of storage hardware.

Intel will report its financial results for the past quarter, followed by IBM on Wednesday, and Microsoft and Google on Thursday.

EMC's RSA Security unit will hold a forum in Washington on data breach prevention and notification policies at federal agencies.

Playing Catch-up, Microsoft Finally Enters Hosted CRM

upstarts like Salesforce.com Inc. broke ground in the hosted customer relationship management business, Microsoft Corp. last week finally unveiled its own hosted service at the company's Worldwide Partner Conference in Denver.

Users and analysts noted that Microsoft appears to be looking to gain market share by keeping the price of its Dynamics Live CRM service well below those of far more established products.

Had Microsoft entered the fray earlier, the price tag would have persuaded Salesforce.com customer Bella Pictures Inc. to take a serious look at the service, said Tom Kramer, president of the San Francisco-based photography firm. "In general, I rarely have a preference for Microsoft," he added.

Josh Greenbaum, an analyst at Enterprise Applications Consulting in Berkeley, Calif., said Microsoft may succeed in the hosted CRM business if it can keep prices well below those of rival products over the long term.

"Their intention to do it based on price [gives Microsoft] a chance for a decent amount of success," he said.

A low-end Dynamics CRM Live offering will be available at no charge through the end of this year. After that, the price will rise to $39 per user per month in 2008 and then to $44 per user per month in 2009. The service will be sold exclusively by partners.

An Enterprise version, which is expected to start shipping next April, will be priced at $59 per user per month. Salesforce.com's low-end price is about $65.

Salesforce.com founder and CEO Marc Benioff noted that Microsoft has yet to "deliver the product" and added that "the reality is, coming up with one that has an inferior price speaks more to the inferior quality of the technology than to its competitiveness as a product."

Nick Garbidakis, chief technology officer at the American Bible Society in New York, said that Dynamics Live CRM will appeal mostly to smaller organizations that don't need to integrate it with other applications. The ABS runs an internally developed CRM system that has strong links to its own systems, so it isn't interested in Microsoft's hosted offering — at least in the short term, Garbidakis said.

Marc L. Songini

SOFTWARE

Microsoft Sets Launch Plans – for Next Year

DENVER – Kevin Turner, Microsoft Corp.'s chief operating officer, said at the company's Worldwide Partner Conference here last week that Windows Server 2008 – formerly code-named Longhorn Server – will be launched next February along with upgrades of SQL Server and Visual Studio.

Turner called those three products the "big dogs" of Microsoft's enterprise software portfolio and told the resellers and other business partners at the conference that he expects the joint rollout to generate "a feeding frenzy of opportunity" as users look to upgrade.

Microsoft had previously indicated that Windows Server 2008 would be available before the end of this year. Company officials said last week that the late-2007 release schedule isn't being changed, although the formal product launch won't occur until next year.

– ERIC LAI, WITH ELIZABETH MONTALBANO OF THE IDG NEWS SERVICE

« TURNER says Microsoft plans to let its "big dogs" out at the same time.

News Digest

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THE WEEK AHEAD

MONDAY: EMC plans to announce upgrades to its full line of storage hardware.

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SARA HAYWARD/GETTY IMAGES

ENTERPRISE APPLICATIONS

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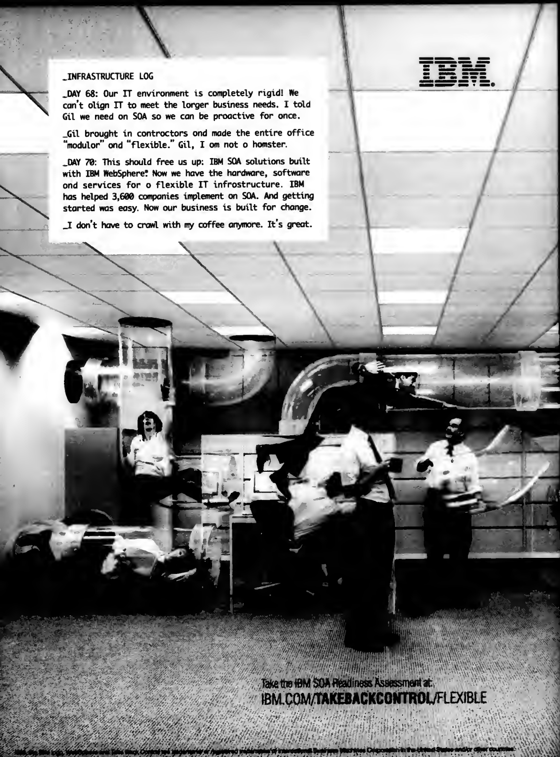

_INFRASTRUCTURE LOG

_DAY 68: Our IT environment is completely rigid! We can't align IT to meet the larger business needs. I told Gil we need an SOA so we can be proactive for once.

_Gil brought in contractors and made the entire office "modular" and "flexible." Gil, I am not a hamster.

_DAY 70: This should free us up: IBM SOA solutions built with IBM WebSphere.® Now we have the hardware, software and services for a flexible IT infrastructure. IBM has helped 3,600 companies implement an SOA. And getting started was easy. Now our business is built for change.

_I don't have to crawl with my coffee anymore. It's great.

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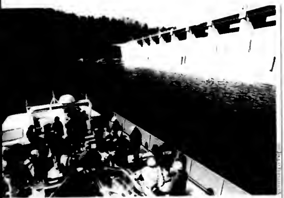


« U.S. Army Corps of Engineers officials give media members a tour of the Wolf Creek Dam.

DATA CENTERS

Tenn. Plans to Move IT to Higher Ground

TWENTY YEARS AGO, the state of Tennessee built a 70,000-square-foot data center in Nashville on top of a landfill, near the Cumberland River and working railroad tracks.

Now the data center's floor is cracking, part of the facility is sinking, and the state plans to spend $68 million to build two new data centers — on high, dry and stable ground.

State officials have yet another reason to hurry. The existing data center is downstream from the Wolf Creek Dam in southern Kentucky. In April, the U.S. Army Corps of Engineers put Wolf Creek — which holds back the largest reservoir in the U.S. east of the Mississippi River — at the top of a list of the five dams most at risk of failing nationwide.

The current data center has "almost every problem imaginable," said Mark Bengle, Tennessee's deputy CIO. "The standards that it was built to 20 years ago are certainly not the standards that we would build a data center to today."

Bengle said the settling of the data center isn't dramatic, but the state's IT staff has moved heavy equipment away from problematic spots.

The new 35,000-square-foot data centers will be about 30 miles apart, Bengle said. Processing will be split between them, and each will be able to pick up the workload of the other. They're expected to be completed in 2010.

The Wolf Creek Dam also threatens other data centers around Nashville.

Gerald Marquis, an information systems instructor at Tennessee State University's college of business in Nashville, said the school's main campus is safe from flooding. But Marquis, who is active in the local chapter of the Association of Information Technology Professionals, said some AITP members "are kind of worried about this, because there is a considerable floodplain area."

— Patrick Thibodeau

Short Takes

Oracle Corp. tomorrow will release 46 patches for a variety of products, including its Oracle Database 10g, Application Server and E-Business Suite. Two of the 20 Oracle database fixes patch vulnerabilities that could allow remote execution of code without authentication.

Microsoft Corp., EMC Corp. and Cisco Systems Inc. have jointly unveiled plans to create a system for sharing sensitive government data, called the Secure Information Sharing Architecture. The system would allow only authorized government personnel and vendors to access protected data.

Mozilla Corp. has delayed the first beta of its Firefox 3.0 browser by at least six weeks, until mid-September or later. A final version is still slated for 2008.

Michael Capellas, former CEO of Compaq Computer Corp. and MCI Inc., has been named to the same post at First Data Corp., a provider of electronic payment products.

OPERATING SYSTEMS

IBM Opens Door to Users on AIX Testing

IBM'S BETA TESTING of its AIX operating system will no longer be an invitation-only event.

Last Thursday, the company announced that beta testing will be open to any users who want to download an early version of the latest upgrade, called AIX 6.

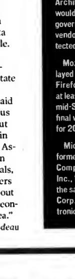
This is IBM's first "open beta" program for AIX, its version of Unix. IT workers are so used to downloading software via the Web for evaluation that "we just decided it made a lot of sense for AIX," said Scott Handy, vice president of worldwide marketing and strategy for IBM's System p server line.

Tony Iams, an analyst at Ideas International Inc. in Rye Brook, N.Y., said the open beta is an attempt by IBM "to capture some of the best elements of what people are expecting now of open source" – such as the ability to test new product releases as early and as often as possible. "It's a small step to take to involve more of the community in testing," Iams said.

But don't mistake the use of the word *open* as meaning "open source." Handy said IBM isn't telegraphing any open-source plans for AIX by offering the open beta.

IBM plans to ship AIX 6 in this year's fourth quarter. Promised new features include an improved virtualization capability designed to give processing workloads the illusion that they're running on their own operating systems.

– PATRICK THIBODEAU



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« **U.S. Army Corps of Engineers officials give media members a tour of the Wolf Creek Dam.**

DATA CENTERS

Tenn. Plans to Move IT to Higher Ground

TWENTY YEARS AGO, the state of Tennessee built a 70,000-square-foot data center in Nashville on top of a landfill, near the Cumberland River and working railroad tracks.

Now the data center's floor is cracking, part of the facility is sinking, and the state plans to spend $68 million to build two new data centers — on high, dry and stable ground.

State officials have yet another reason to hurry. The existing data center is downstream from the Wolf Creek Dam in southern Kentucky. In April, the U.S. Army Corps of Engineers put Wolf Creek — which holds back the largest reservoir in the U.S. east of the Mississippi River — at the top of a list of the five dams most at risk of failing nationwide.

The current data center has "almost every problem imaginable," said Mark Bengle, Tennessee's deputy CIO. "The standards that it was built to 20 years ago are certainly not the standards that we would build a data center to today."

Bengle said the settling of the data center isn't dramatic, but the state's IT staff has moved heavy equipment away from problematic spots.

The new 35,000-square-foot data centers will be about 30 miles apart, Bengle said. Processing will be split between them, and each will be able to pick up the workload of the other. They're expected to be completed in 2010.

The Wolf Creek Dam also threatens other data centers around Nashville.

Gerald Marquis, an information systems instructor at Tennessee State University's college of business in Nashville, said the school's main campus is safe from flooding. But Marquis, who is active in the local chapter of the Association of Information Technology Professionals, said some AITP members "are kind of worried about this, because there is a considerable floodplain area."

— Patrick Thibodeau

Short Takes

[illegible] tomorrow will release 46 patches for a variety of products, including its [illegible] and [illegible]. Two of the 20 Oracle database fixes patch vulnerabilities that could allow remote execution of code without authentication.

[illegible] and [illegible] have jointly unveiled plans to create a system for sharing sensitive government data, called the [illegible]. The system would allow only authorized government personnel and vendors to access protected data.

[illegible] has delayed the first beta of its [illegible] browser by at least six weeks, until mid-September or later. A final version is still slated for 2008

[illegible] former CEO of [illegible] and [illegible], has been named to the same post at [illegible], a provider of electronic payment products.

OPERATING SYSTEMS

IBM Opens Door to Users on AIX Testing

IBM'S BETA TESTING of its AIX operating system will no longer be an invitation-only event.

Last Thursday, the company announced that beta testing will be open to any users who want to download an early version of the latest upgrade, called AIX 6.

This is IBM's first "open beta" program for AIX, its version of Unix. IT workers are so used to downloading software via the Web for evaluation that "we just decided it made a lot of sense for AIX," said Scott Handy, vice president of worldwide marketing and strategy for IBM's System p server line.

Tony Iams, an analyst at Ideas International Inc. in Rye Brook, N.Y., said the open beta is an attempt by IBM "to capture some of the best elements of what people are expecting now of open source" – such as the ability to test new product releases as early and as often as possible.

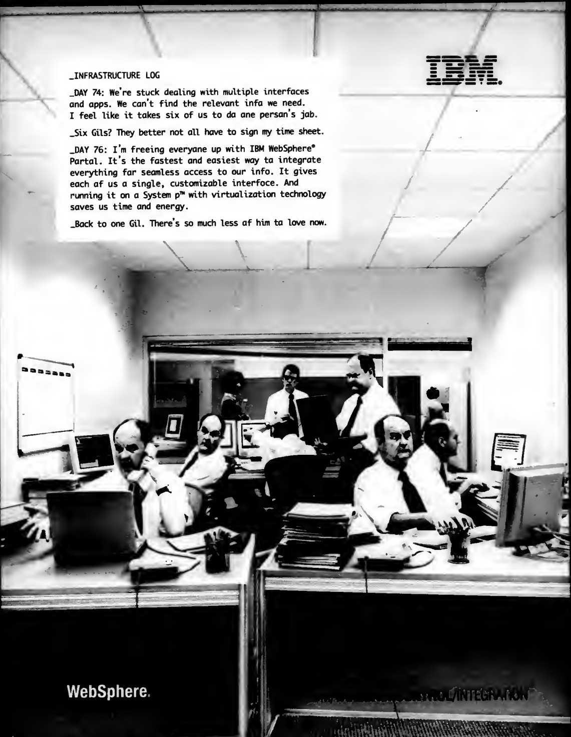
"It's a small step to take to involve more of the community in testing," Iams said.

But don't mistake the use of the word *open* as meaning "open source." Handy said IBM isn't telegraphing any open-source plans for AIX by offering the open beta.

IBM plans to ship AIX 6 in this year's fourth quarter. Promised new features include an improved virtualization capability designed to give processing workloads the illusion that they're running on their own operating systems.

– PATRICK THIBODEAU

TYLER BOYES/FOTOLIA.COM



_INFRASTRUCTURE LOG

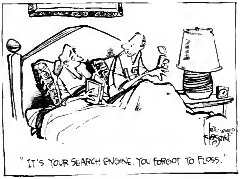
_DAY 74: We're stuck dealing with multiple interfaces and apps. We can't find the relevant info we need. I feel like it takes six of us to do one person's job.

_Six Gils? They better not all have to sign my time sheet.

_DAY 76: I'm freeing everyone up with IBM WebSphere® Portal. It's the fastest and easiest way to integrate everything for seamless access to our info. It gives each of us a single, customizable interface. And running it on a System p™ with virtualization technology saves us time and energy.

_Back to one Gil. There's so much less of him to love now.

By John Klossner


"IT'S YOUR SEARCH ENGINE. YOU FORGOT TO FLOSS."

Microsoft Crosses Border on Coding

[illegible], indeed. No H-1B visa cap. An exchange rate that puts the Canadian dollar almost at parity with its U.S. counterpart. And now an endorsement from Microsoft Corp. as a place to develop software.

On July 5, Microsoft announced plans to open a software development center in Vancouver (pictured above), partly to help it "recruit and retain highly skilled people affected by immigration issues in the U.S."

Evan Green, a partner at Toronto-based law firm Green & Spiegel LLP, said the Canadian government's process for quickly bringing high-tech workers with certain skills into the country can be completed in two to eight weeks. And there is no limit on the number of foreign workers who can enter Canada, Green said.

Canada's technology sector needs immigration. Paul Swinwood, president of the Information and Communications Technology Council in Ottawa, said the number of available high-tech jobs is expected to increase by about 100,000 over the next several years. But Canadian universities graduate only about 15,000 students with tech skills each year.

Swinwood said employees brought in for temporary work can usually get permanent residency. "When you have a job here in Canada," he said, "that's a pretty fair indication to the immigration department that you are of value to the country."

— Patrick Thibodeau

BENCHMARKS LAST WEEK

Binyamin Schwartz, 28, of Oak Park, Mich., was sentenced to five years in federal prison for stealing and trying to sell the personal data of more than 110,000 people while working as a software consultant at Sentry Insurance Co.

The U.S. Department of Justice belatedly submitted a report to Congress detailing six data mining initiatives under way or planned by the FBI and other DOJ units.

50 YEARS AGO: AT&T's Bell of Pennsylvania unit began trials of a personal paging service with a pocket-size receiver.

Kaspersky Sues Chinese Vendor

Moscow-based security software vendor Kaspersky Lab Ltd. has filed a lawsuit against Rising Technology Co., a Beijing-based antivirus software company, contending that Rising made false claims about Kasperky's products and business practices.

The suit, filed in the Tianjin City No. 1 Intermediate People's Court, charges that Rising violated Chinese law by telling its users that Kaspersky's security software could damage their computers.

The suit also contends that Rising defamed Kaspersky by claiming that the Russian firm engaged in anticompetitive practices and that it hired people to attack Rising in online forums and in the media.

In a statement, Rising listed six instances where Kaspersky software allegedly misidentified system files from several programs as malware.

[illegible] and [illegible], IDG News Service

Parliament Seeks Bids for IT Work

The Australian Department of Parliamentary Services, which provides IT services to the Parliament House, is seeking bids to replace its 10-year-old ParlInfo document management system with a more modern application.

ParlInfo contains more than 1 million Australian Parliament documents.

The contract calls for the replacement system to include a "highly configurable" Web-based interface that allows users to conduct simple and advanced searches and browse repositories.

The agency said that it expects to select a vendor next month and to have a new system in place by early next year.

[illegible], Computerworld Australia

Research In Motion Ltd.'s BlackBerry handheld devices finally cleared regulatory hurdles and were approved for sale in China. RIM co-CEO Jim Balsillie said a delivery schedule is being finalized.

[illegible], IDG News Service

STUART MCCALL/GETTY IMAGES

SOFTWARE DEVELOPMENT

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BETWEEN THE LINES *By John Klossner*

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Global Dispatches

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Sumner Lemon *and* **Robert McMillan**, *IDG News Service*

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Rodney Gedda, *Computerworld Australia*

BRIEFLY NOTED

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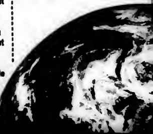

IBM

_INFRASTRUCTURE LOG

_DAY 25: Our ad hoc security solutions are not enough. We can't handle new threats. We're always playing catch-up. We're leaving ourselves vulnerable and exposed.

_Gil's had a security epiphany: high-powered lasers. They're everywhere. I keep zapping myself as I type.

_DAY 26: I'm taking back control with a security solution from IBM. Their security service experts can help us assess our needs. IBM Tivoli® helps us monitor and respond to threats while managing access to our information. And the IBM System z™'s encryption and multilevel security features are legendary.

IBM.COM/**TAKEBACKCONTROL**/SECURITY

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Pandemic Planning Not At Fever Pitch

Some IT execs are preparing for flu outbreak, but broad interest appears to be waning. **By Patrick Thibodeau**

JAMES SELIGMAN, CIO at the Centers for Disease Control and Prevention, may be among the first people to know if the U.S. is struck by a pandemic, such as an avian flu outbreak. Seligman's IT staff is building a system that will enable the CDC to collect emergency room data in real time from hospitals around the country.

But Seligman is also focused on ensuring that the federal agency's IT operations can continue delivering essential services to its employees during a pandemic or other public health emergency. And, he said, the Atlanta-based CDC has made some big strides in that regard over the past 18 months.

If you live in Jakarta, this is all you think about. If you live in the United States, all you think about is Paris Hilton.

For instance, the agency has dramatically increased the capacity of IT systems to support employees working remotely. Remote access support has risen from several hundred simultaneous user sessions to several thousand as a result of an expansion in server capacity and the purchase of more Citrix software licenses, Seligman said.

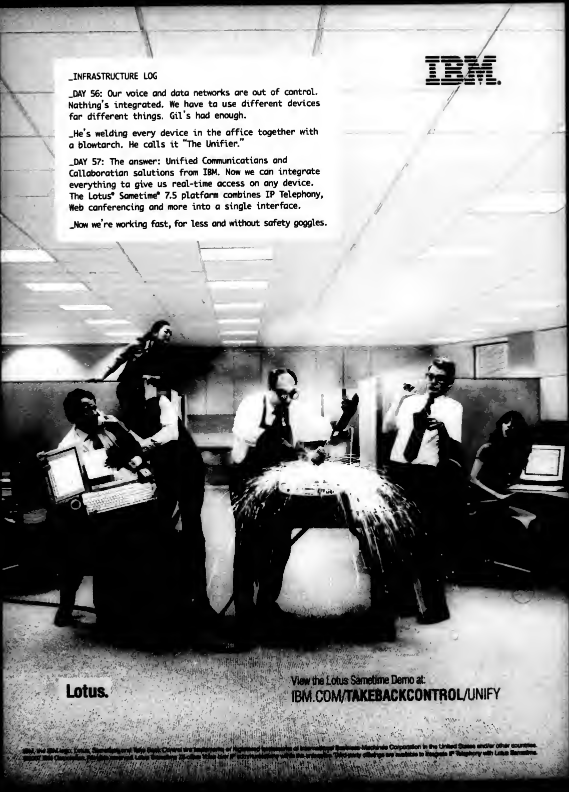
In addition, the CDC has crossed-trained IT workers in an effort to make sure that key systems can continue to run in an emergency. And it has installed showers and stockpiled cots, face masks and other supplies to make it possible for the IT staff to work long hours if necessary.

Seligman thinks there's no choice but to prepare for a pandemic. At the CDC, he works with scientists who are deeply involved in the issue and believe that a pandemic is inevitable. "It's not a question of if, but when," he said. "So the sooner that companies and families and communities and states are prepared, the better."

But many other IT organizations don't appear to be ready, according to Gartner Inc. analyst Ken McGee. At a Gartner data center conference in Las Vegas last November, McGee gave a presentation on the risk of an avian flu pandemic. He recommended that the IT professionals in the audience prepare a pandemic response plan by the end of this year's second quarter.

Despite his admonition, McGee is worried that fears of a possible pandemic are waning in the U.S. Most of Gartner's clients "would not be prepared if this descended upon the world tomorrow — they just simply would not be ready," he said. "I think it's just part of the human condition: You don't

Continued on page 16



IBM.

_INFRASTRUCTURE LOG

_DAY 56: Our voice and data networks are out of control. Nothing's integrated. We have to use different devices for different things. Gil's had enough.

_He's welding every device in the office together with a blowtorch. He calls it "The Unifier."

_DAY 57: The answer: Unified Communications and Collaboration solutions from IBM. Now we can integrate everything to give us real-time access on any device. The Lotus® Sametime® 7.5 platform combines IP Telephony, Web conferencing and more into a single interface.

_Now we're working fast, for less and without safety goggles.

Lotus.

View the Lotus Sametime Demo at:
IBM.COM/**TAKEBACKCONTROL**/UNIFY

IBM, the IBM logo, Lotus, Sametime and Take Back Control are trademarks or registered trademarks of International Business Machines Corporation in the United States and/or other countries. ©2007 IBM Corporation. [illegible] Lotus Sametime [illegible] IP communications within the enterprise. Third-party offerings are available to integrate IP Telephony with Lotus Sametime.

Continued from page 14

put the stop sign up until after the traffic accident."

The declining level of concern cited by McGee was backed up by poll results released July 2 by Ipsos Public Affairs, a research organization that has offices in New York, Washington and other U.S. cities.

In June, Ipsos conducted an online survey of 1,438 U.S. residents age 18 or older. When asked about the issue of avian flu in the U.S., 27% of the respondents said they were "concerned" — down from 35% in a similar survey last year. Forty-one percent said they were "not concerned," compared with 31% a year ago.

Those results may not be entirely surprising. The front-page news coverage that the avian flu seemed to routinely receive last year has been muted. And the number of human cases and deaths fell below their 2006 rates during the first half of this year, according to the World Health Organization.

The WHO reported that 79 people died from avian flu last year. As of June 29, there had been 33 deaths this year, it said. The WHO, which has counted 317 cases and 191 deaths worldwide since 2003, has left its pandemic alert index at the third highest of six levels, indicating "no or very limited human-to-human transmission."

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> JAMES SELIGMAN, THE CDC'S CIO, ON THE LIKELIHOOD OF A PANDEMIC STRIKING THE U.S.

Scott McPherson, CIO of the Florida House of Representatives and head of the Florida CIO Council's pandemic preparedness committee, tracks news about the avian flu daily. Despite the reduced rates of cases and deaths thus far this year, McPherson said he's mystified by the lack of attention that the threat is getting in the U.S.

He contrasted that with the level of interest that the avian flu gets in countries such as Indonesia. "If you live in Jakarta, this is all you think about," McPherson said. "If you live in the United States, all you think about is Paris Hilton."

McPherson thinks that IT departments not only need to plan for a potential pandemic but also must ensure that their processes can continuously adapt to changing conditions.

For instance, he said that if a pandemic occurs, expanding telecommuting programs won't be a viable option because of network overload and a lack of broadband access for many employees. IT managers "need to prepare for what happens after the work-at-home plans implode," McPherson said.

But Bruce Schneier, chief technology officer at managed security services vendor BT Counterpane Internet Security Inc. in Mountain View, Calif., said the scope of the disaster caused by a pandemic would be so large that businesses' contingency plans would be rendered useless.

"If everyone loses 40% of their workforce, the world is different," Schneier said. "You cannot prepare for [that], and you're wasting your time if you try." That sort of planning can only be done by governments, not companies, he added.

Even in Australia, which is closer to avian flu hot spots than the U.S. is, media attention to the pandemic threat has diminished from last year, said Richard Constantine, CIO at Swinburne University of Technology, whose 26,000 students are spread across six campuses in the suburbs of Melbourne.

But pandemic planning is a top-of-mind issue for Constantine, who sees it as a necessary part of a broader approach to business contingency planning. "What we've come to realize is that there have been a number of things that can happen that organizations have to plan for," he said, referring to events such as the recent shootings at Virginia Tech.

Constantine said Swinburne is working to ensure that IT and other departments are aligned so that each is aware of what services will be delivered in an emergency and everyone understands exactly what needs to be done.

Choosing products is also part of the school's planning process. "We're always looking for technology that can be managed remotely," Constantine said. ■

Robert L. Mitchell contributed to this story.

Risks of Pandemics May Be Hard for People to Grasp

could be so devastating, why is public concern waning, and why aren't many organizations moving faster to prepare? The reasons have much to do with the fact that people often do a poor job of assessing risks, said Duncan Watts, a professor of sociology at Columbia University in New York.

According to Watts, people tend to overestimate the dangers of some risks – serial killers, for example – while underestimating others, such as obesity or smoking. That tendency is "heightened for rare events that develop slowly in time, don't display dramatic warning signals and manifest themselves at scales much larger than that of the individual," he said. "Unfortunately, global epidemics satisfy all these criteria."

There's also the matter of threat overload, said Bruce Schneier, CTO at BT Counterpane. "There's a limit to what a normal person can worry about, and terrorism has that top spot right now," Schneier said. He noted that he doubts that will change until a pandemic actually occurs and hits close to home – for example, if family members and friends start dying.

The fact that the World Health Organization hasn't upgraded the status of its avian flu pandemic alert for some time could also be leading to complacency, Schneier said.

People "respond to an increasing risk," he said, but after some time passes, "if it stays up, people don't pay attention."

– ROBERT L. MITCHELL

Continued from page 14

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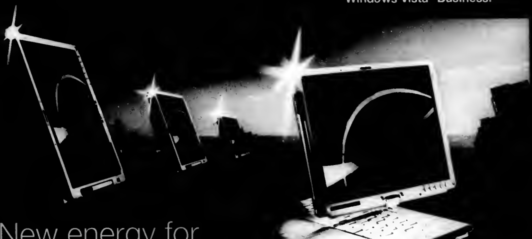
Fujitsu recommends
Windows Vista™ Business.



New energy for
greater mobility.

The LifeBook® T4200 Tablet PC: Energize your
mobile workforce with Enterprise-class reliability.

The Fujitsu LifeBook® T4200 Tablet PC with Intel® Centrino® Duo Mobile Technology reflects the Fujitsu commitment to delivering the most reliable products. It's manufactured in-house so we can maintain the highest quality standards. The Fujitsu LifeBook T4200 Tablet PC also features the industry's first bi-directional LCD hinge and a brilliant, 12.1" XGA display with wide viewing angles, so it's impressive any way you look at it. And whether you use its keyboard or powerful inking capabilities and pen-driven navigation, you get the best of both worlds. Go to **us.fujitsu.com/computers/reliability** for more information.

SUPERIOR CONNECTIVITY *Wi-Fi, Gigabit Ethernet, modem and optional Bluetooth 2.0*

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BUILT-IN MODULAR BAY *add a weight-saver, media drive or 2nd battery*

intel Centrino Duo
Core™2 Duo inside™

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NEWS ANALYSIS

Users Plan for Quick Oracle 11g Upgrades

Security improved; broad grid support still lacking

By China Martens

ORACLE DATABASE users last week said they expect to quickly upgrade to the new 11g release, which adds new security and management features but continues to lack support for grid technology.

Oracle 11g, unveiled last week in New York, is the successor to Oracle Corp.'s 10g database, which first shipped in February 2004.

Wachovia Corp. in Charlotte, N.C., hopes to certify 11g for internal use by the end of the year and to have its migration efforts well under way in 2008, according to Ed Mulheren, a senior database administrator.

He said he expects that the improved security features in 11g will help Wachovia meet the ever-increasing regulatory demands on financial services companies.

Mulheren said that updates like 11g's support of case-sensitive passwords bring the database's security capabilities more in line with Wachovia's Windows desktop security policies.

Arup Nanda, senior director of database engineering and architecture at Starwood Hotels and Resorts Worldwide Inc. in White Plains, N.Y., expects that his organization will migrate to Oracle 11g next year.

The hotel chain didn't participate in the beta program because it uses HP-UX and 11g doesn't yet run on that operating system.

"We will have to settle for the production release later this year and then at least six months of testing after that," Nanda wrote in an e-mail. Starwood uses Oracle databases for almost all of its business processes, including reservations, check-in and checkout, and guest loyalty programs, he said.

Nanda did point out that the vendor's upgraded database still lacks the ability to make a tablespace read-only when there are active transactions in the database on different tablespaces.

NEW FEATURES

Oracle 11g

- Advanced automation and self-management tools
- Integration with Oracle Data Guard disaster recovery software
- New data partitioning and compression capabilities
- Support for large objects like images and advanced data types
- Improvements in XML performance
- Embedded online analytical processing cubes

Oracle said the 11g database includes new automation features; integration with its disaster recovery software; new data partitioning and compression capabilities; and the ability to store images, large text objects, and advanced data types like XML, medical images and 3-D objects.

PUTTING THE 'G' IN 11G

Andy Mendelsohn, senior vice president of database server technologies at Oracle, acknowledged that 11g lacks extensive support for grid computing, even though the "g" in both 10g and 11g refers to *grid*.

"We're doing a lot of work in grid for the next release, which will make grid infrastructure even easier to adopt," he said.

Analysts said that if 11g works as promised, it could be a solid, if unspectacular, upgrade.

For example, James Governor, an analyst at RedMonk, a Denver-based consulting firm, said that while the new release includes no "earth-shattering" updates, its performance and availability improvements make it an adequate upgrade.

Donald Feinberg, an analyst at Gartner Inc., added that 11g's ability to manage all sorts of unstructured data could be important because companies are hungry to expand the types of data they can manage.

Beta testing for 11g began in September, but Oracle had been closemouthed on a launch date until about a month ago.

> **"Oracle was a little bit more cautious, wanting to make sure they got the product right.**
>
> **ARI KAPLAN,** PRESIDENT, INDEPENDENT ORACLE USERS GROUP

"Oracle was a little bit more cautious, wanting to make sure they got the product right," said Ari Kaplan, president of the Independent Oracle Users Group and a senior consultant at Datalink Corp., a database consulting firm in Chanhassen, Minn.

Kaplan said the key upgrade in the new database is improved integration of 11g with Oracle's Audit Vault and Database Vault software, which will help prevent database administrators from making unauthorized changes to data.

"There's a key flaw with all databases," he said. "If they're smart, a DBA can modify data and cover their tracks." Oracle's vaulting software ensures that every action a database administrator executes effectively "goes into a lockbox that they are powerless to modify," Kaplan added.

A Linux version of the database will ship in August. Pricing was not disclosed. ■

Martens *is a reporter for the IDG News Service.* Computerworld's **Marc L. Songini** *contributed to this story.*

■ NEWS ANALYSIS

Users Plan for Quick Oracle 11g Upgrades

Security improved; broad grid support still lacking

By China Martens

ORACLE DATABASE users last week said they expect to quickly upgrade to the new 11g release, which adds new security and management features but continues to lack support for grid technology.

Oracle 11g, unveiled last week in New York, is the successor to Oracle Corp.'s 10g database, which first shipped in February 2004.

Wachovia Corp. in Charlotte, N.C., hopes to certify 11g for internal use by the end of the year and to have its migration efforts well under way in 2008, according to Ed Mulheren, a senior database administrator.

He said he expects that the improved security features in 11g will help Wachovia meet the ever-increasing regulatory demands on financial services companies.

Mulheren said that updates like 11g's support of case-sensitive passwords bring the database's security capabilities more in line with Wachovia's Windows desktop security policies.

Arup Nanda, senior director of database engineering and architecture at Starwood Hotels and Resorts Worldwide Inc. in White Plains, N.Y., expects that his organization will migrate to Oracle 11g next year.

The hotel chain didn't participate in the beta program because it uses HP-UX and 11g doesn't yet run on that operating system.

"We will have to settle for the production release later this year and then at least six months of testing after that," Nanda wrote in an e-mail. Starwood uses Oracle databases for almost all of its business processes, including reservations, check-in and checkout, and guest loyalty programs, he said.

Nanda did point out that the vendor's upgraded database still lacks the ability to make a tablespace read-only when there are active transactions in the database on different tablespaces.

NEW FEATURES

Oracle 11g

Advanced automation and self-management tools

Integration with Oracle Data Guard disaster recovery software

New data partitioning and compression capabilities

Support for large objects like images and advanced data types

Improvements in XML performance

Embedded online analytical processing cubes

Oracle said the 11g database includes new automation features; integration with its disaster recovery software; new data partitioning and compression capabilities; and the ability to store images, large text objects, and advanced data types like XML, medical images and 3-D objects.

PUTTING THE 'G' IN 11G

Andy Mendelsohn, senior vice president of database server technologies at Oracle, acknowledged that 11g lacks extensive support for grid computing, even though the "g" in both 10g and 11g refers to *grid*.

"We're doing a lot of work in grid for the next release, which will make grid infrastructure even easier to adopt," he said.

Analysts said that if 11g works as promised, it could be a solid, if unspectacular, upgrade.

For example, James Governor, an analyst at RedMonk, a Denver-based consulting firm, said that while the new release includes no "earth-shattering" updates, its performance and availability improvements make it an adequate upgrade.

Donald Feinberg, an analyst at Gartner Inc., added that 11g's ability to manage all sorts of unstructured data could be important because companies are hungry to expand the types of data they can manage.

Beta testing for 11g began in September, but Oracle had been closemouthed on a launch date until about a month ago.

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***Martens** is a reporter for the IDG News Service. Computerworld's **Marc L. Songini** contributed to this story.*

On the Mark

HOT TRENDS ■ NEW PRODUCT NEWS ■ INDUSTRY BUZZ BY MARK HALL

HAD ENOUGH YET, OPTICAL BOY!?
NOT YET, TAPE DUDE!

MATTHEW FAULKNER

Backup Battle Begins Anew

TAPE HAS ruled the storage backup market since, well, forever. Mike Sparkes, a product manager at backup behemoth Quantum Corp. in San Jose, acknowledges past assaults on tape's dominance from low-cost Serial ATA drives and optical media, but he isn't unduly concerned. "Tape is not going away anytime soon," he predicts. One reason for his sanguine outlook is that tape systems are not standing still. Sparkes points to his company's DXi 7500. Due to ship in Q4, the as-yet unpriced DXi backs up a whopping 240TB in a single enclosure and can sustain up to 8TB an hour in data throughput. And Sparkes claims that DXi works with existing backup software.

Quantum's DXI 7500 holds a staggering 240TB of backup data.

But optical could be ready to seriously duel with tape if a San Diego-based storage vendor achieves its goals. Wayne Yamamoto, CEO of Call/Recall Inc., says his engineers have created a high-density optical system that can pack 1TB of data onto a single optical disc in a standard DVD format. The Call/Recall discs use a special polymer coating, he says, but still retain the low cost and durability of today's optical media. Ed Walker, vice president of engineering, observes that optical's main drawback has been capacity, which heretofore has been less than one-tenth that of tape. But the 1TB disc more than matches a tape's capacity, and Yamamoto claims that a 5TB disc is just around the corner. Given optical media's 50-year life expectancy — about 10 times that of tape — tape could find itself seriously under assault. Yamamoto expects third parties to start shipping Call/Recall-based optical systems by late 2008 — just about the time Quantum updates its DXi line again. Should be interesting.

ColdFusion: Get It While It's Hot

Grabbing database information for Web pages has been the bread and butter of ColdFusion, says Tim Buntel, senior product marketing manager at San Jose-based Adobe Systems Inc. Adobe took over ColdFusion when it acquired Macromedia Inc., and with Version 8, it's adding its own touches. For example, ColdFusion 8 is tightly integrated into Adobe's popular PDF technology. This will let you build a Web app so PDF forms that site visitors fill out and deposit into your back-end database can be processed in batches. Buntel says you'll also be able to use ColdFusion 8 to manage RSS feeds and inject database information into AJAX Web pages. And there's new support for VMware, Microsoft Virtual Server and JBoss. Buntel sees the new release, expected to be ready in a few weeks, as "the hub between a broad range of client technologies and the back end."

10k+
Number of developers working with the ColdFusion beta since May, says Adobe.

Communities Carry Risks

Building a social community around your brand is all the rage. But rage may be what you risk when you let customers communicate with one another on your Web site. Matt Goddard, principal at Baltimore Web consultancy R2i.ntegrated, says his clients are excited and terrified at the prospect of giving their user communities a platform. He says they fear that irate customers will monopolize the communities with whining. However, trying to control such behavior will be worse than "letting it ride," Goddard argues. "If you have good stuff and a large enough community, the good will rise to the top," he promises. And, he advises, if your community isn't likely to be large enough, don't even try to start one. ■

Less than 2 years
Gartner's estimate of when social network analytics will go mainstream.

SETH AFFOUMADO

THE GRILL

Geoffrey A. Moore

The best-selling **business author** and **innovation guru** tells **how to neutralize** the competition, **where to spend** those productivity savings and **why scrimping on IT** is just **dumber than dirt.**

Dossier

Name: Geoffrey A. Moore

Position: Best-selling business author of *Dealing With Darwin*, *Crossing The Chasm* and *Inside The Tornado*; consultant; venture capital partner

Organizations: The Chasm Group and Mohr Davidow Ventures

Location: San Mateo, Calif.

Favorite technologies: The BlackBerry and broadband

Favorite nonwork pastimes: Golf and reading

Ask him to do anything but "clean the gutters."

In high school, he was "a nerd."

Epitaph of choice: "An epitaph makes you think your life is about you. I want to think of my life as part of a continuation. You want to pass the buck."

Last book read: *The Curious Incident of the Dog in the Night-time*, by Mark Haddon

Role model: "I want to grow up to be like my children, Margaret, Michael and Anna."

Is innovation inherently disruptive? Only one type of innovation is disruptive, but it gets a lot of press [because] disruptive innovations bring about new categories of business. They're spectacular, and they're fun to write about. Another kind of innovation is around neutralizing your competitors' efforts against you. A third is around productivity. But the standard of innovation that companies should be using is differentiation that creates in the customer's mind a dramatic gap between you and your competitors. That's what creates superior economic return.

Is the wrong innovation focus a common corporate mistake? The big failure of most companies is they do not have a clear innovation strategy. When they improve productivity, they have to give that money back to customers in order to get the next deal. That's a downward spiral. You want to do a produc-

Continued on page 22

INGRES

SETH AFFOUMADO

> **“You can't afford to run a major corporation in a high-cost economy without an innovation strategy that leverages IT. It's just crazy.**

Continued from page 20

tivity project and spend the savings on yourself so you can be innovative.

Give me an example of a company with a good innovation strategy, and one that's missing the mark. The obvious consumer example is Apple. It has a great strategy around design and marketing and experience innovation. They're definitely setting themselves apart.

Sony has a failed innovation strategy. It's not that Sony isn't innovative. It's that the [differentiation] gap they're creating is insufficient.

In your blog, you quote H.L. Mencken's observation that "for every complex problem, there is an answer that is clear, simple and wrong." What are the clear, simple and wrong answers in IT these days? People say the No. 1 question should be the cost of IT itself, to centralize or decentralize. But these are tactical ideas. With something as strategic as IT, that's just insane.

We don't have a lot of things in a high-cost economy to set ourselves apart from low-cost competitors. IT is one of them. To sit there and low-ball your IT expenditure is just dumber than dirt. I blame the CEO and CFO who have such a lack of imagination about their innovation strategy that all they can do is cost-cutting. You can't afford to run a major corporation in a high-cost economy without an innovation strategy that leverages IT. It's just crazy.

So does early adoption of IT automatically translate into competitive advantage? No, if you do not have an innovation strategy, adopting technology is just an expense. Until you have a clear view of [your] differentiation strategy, it makes no sense to do the early adoption of anything. Early adoption for productivity doesn't make sense. There are too many bugs.

The only competitive advantage that means anything is the vector for advantage that a company is going to use to set itself apart. Once you know the business vector, early adoption of technologies that enable or amplify that vector is the winning play.

Who, in your opinion, is the greatest innovator of all time? I'm not interested in that kind of innovation. I'm interested in Darwinian innovation, these punctuated moments of equilibrium. They're not associated with a single person, but with a system that builds up stress, builds up stress and then completely restructures itself. We tend to romanticize innovation as something done by mavericks in confrontation or resistance to a group. But in large corporations, it's not a good model. You need a fabric of innovation where people can be thoughtful, open and systematic about innovation.

Companies are inherently hierarchical, not collaborative. Increasingly, they're more decentralized and geographically dispersed. How does this affect innovation? This is the big challenge. You'd like people to transform their business networks so that everything that is differentiating to their strategy they do inside the company, and everything that is nondifferentiating they push outside — outsource.

You've got to get much more agile with your network of business partners, suppliers and customers. We've gone down this path with client/server, EDI, XML and portals, but it's pretty clumsy and not very agile.

So, what's next? [Service-oriented architecture] is all about accessing something in the moment. And SOA should enable layers of collaboration that haven't happened before.

Tearing down legacy systems is not in the cards. You have to pave over them. You do an SOA overlay onto existing systems of record, and you expose their functionality through services. You build composite applications by calling on these underlying systems. That means committing to transitioning to SOA. The IT guys get that it's technically the right thing to do, but I don't think any of them get that there is urgency around it.

What can IT organizations start doing today to become more innovative? Start a dialogue with the most innovative business unit leader you have access to. Ask, "What we are going to do over the next two to three years that our competitors won't match?" Go as deeply as possible. If he says, "Better products," ask, "Better how?"

Push hard for a credible statement of innovation strategy. Once you get that, get your best and brightest and come back in 30 days with every possible tech thing you could do to enable or amplify that innovation.

Put together a funding plan for how to do it. If the company is in a high-growth mode, maybe you'll get more money, but most likely not. Instead, you'll have to become more productive elsewhere. But don't go after savings until you know where they'll be spent.

The problem with [most] productivity projects is that they just let management drift for one more quarter. Then, when there's not enough fat left to convert anything to energy, you're out in the desert. Initiate the IT-for-differentiation dialogue early. It'll fall on deaf ears with some leaders. So go to the guy with passion and energy around his business. Don't waste time with the whiners.

— Interview by **Julia King**

Let's leave the hardware where it is.

Introducing the software-based VoIP solution from Microsoft. It's a whole new way to look at telephony. As it turns out, that important move to VoIP isn't about ripping and replacing or big, upfront costs.

That's because it's no longer about hardware. It's actually about software. That's right. Keep your hardware—your PBX, your gateways, even your phones. Add software [illegible] integrates with Active Directory,® Microsoft® [illegible] Exchange Server, and your PBX. Simply [illegible] investment and make it part of your [illegible] solution. Because what you have is good. [illegible] right software is even better. Learn [illegible]

Your [illegible]

■ OPINION

Michael Gartenberg

Lessons From a Mac OS Switcher

OVER THE past few months, I've put aside my PC and switched over to a Macintosh full time. I wanted to take a closer look at the viability of the Mac for business use, something more and more users are considering (see "Mac Attack," page 26). I settled on a MacBook, since I need portability and the MacBook Pro is too heavy to carry on a regular basis. I ran the latest version of Mac OS, 10.4.9, and installed Windows XP with Service Pack 2 under both Parallels Workstation and Apple's Boot Camp beta. Here's what I learned along the way.

HARDWARE

The MacBook is a fantastic machine. The attention to detail is amazing, from the MagSafe connector, which makes it virtually impossible for anyone to trip over your power cord, to the integrated iSight camera, which makes videoconferencing simple. But though it's the lightest Mac you can get, at a travel weight of 5.2 lbs., it's not nearly light enough for me. I have no need on the road for an integrated optical disc and would prefer to leave it behind or to be able to put an extra battery in there. The MacBook also lacks expansion slots, so there are no integrated memory card readers or EV-DO cards (USB ones do work).

Lesson: If there's a Mac that fits your needs perfectly, you'll probably love it, but choices are limited, especially for those who want something ultralight.

LINE-OF-BUSINESS APPLICATIONS

All my corporate Web-based applications worked. Some of them didn't love Safari, but I was able to fix that by downloading Camino, a Firefox-based browser optimized for Mac OS.

Lesson: Problems are likely to have work-arounds.

PRODUCTIVITY APPLICATIONS

For the most part, I used the Mac version of Microsoft Office for collaborating with the rest of the organization, and it mostly worked out OK. But a PowerPoint presentation I had spent hours on couldn't be viewed properly on Windows machines. And launching applications was slow, since the current operating system isn't a universal binary and so relies on Apple's Rosetta to run Office via emulation. I preferred using Apple's tools, such as Pages and Keynote, when possible.

Lesson: Compatibility isn't a problem until you get into more complex documents. (As expected, graphic arts applications, particularly the Adobe Creative Suite, ran flawlessly.)

■ The Mac of today is not the Mac of old. The benefits outweigh the hassles.

EXCHANGE SYNCHRONIZATION

This was a big one for me. Microsoft's Entourage application just didn't work well on the Mac. Calendar times didn't sync up, and appointments were often (but not always) a day off. OS X's native mail application worked fine with Exchange, and there are two Mac applications that handle calendar and syncing with the Exchange global address list. But both of them have limitations that make them hard to recommend.

Lesson: If you rely on Exchange, especially for calendar sync, you're going to be best served using Parallels Workstation or Boot Camp to run Outlook directly under Windows.

Bottom line: The Mac of today is not the Mac of old. The benefits outweigh the hassles. The ability to run Windows seamlessly via dual booting using Boot Camp or virtually with Parallels Workstation means Windows applications are only a click away. ■

Michael Gartenberg *is vice president and research director for the personal technology and access and custom research groups at JupiterResearch in New York. Contact him at mgartenberg@optonline.net. His weblog and RSS feed are at* http://weblogs.jupiterresearch.com/analysts/gartenberg.

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This is the [illegible] of articles as Computerworld follows AWC's transition to Apple over the coming year.

"This stuff just works," says **CIO Dale Frantz**, referring to the Apple platform to which Auto Warehousing Co. is transitioning.

Mac Attack!

Just down the road from Redmond, an enterprise Microsoft shop is switching to Apple.

By Julia King

PHOTOGRAPHS BY KEITH BROFSKY

It's little things like the small silver Apple logo on CIO Dale Frantz's crisp white shirt that signal the sea change in the works at Auto Warehousing Co. ■ Over the next 60 days, AWC will begin systematically pulling the plug on all Windows-based PCs in its cavernous auto processing shop and power up Macs to execute virtually all of its revenue-generating operations. ■ The move comes on the heels of a quiet wholesale replacement of Windows-based servers for data storage and Web operations, which are now running on Apple Inc.'s Xserve RAID machines.

"This is not a vengeance case," Frantz says, referring to his 2006 tangle with Microsoft over threatening letters from the vendor that made false accusations about unlicensed software (see story, page 28).

Instead, AWC's new strategic enterprise technology plan is the direct result of proof-of-concept testing that indicates that the company can cut costs, increase system reliability and security, and provide expanded IT support services hy porting a major portion of its IT infrastructure to Apple. Extricating itself from its exclusive dependence on Microsoft is simply the cherry on top.

For Apple, which declined to comment for this story, the move represents a feather in its enterprise computing cap. It also gives the vendor a toe in the door of the Microsoft-heavy automotive industry. AWC is the largest full-service auto processing company in North America, with 23 sites across the U.S. and Canada.

"As a mainstream, big platform, we haven't seen a lot [of Apple] in automotive," says Gartner Inc. analyst Michael Silver. "Apple is still very niche-y. Its niches are in the media creation and the scientific communities."

AWC's plan, to be announced at a July 29 managers meeting, calls for the retention of some Microsoft technology. AWC's main client/server software, VIPS (Vehicle Inventory Processing System), will continue to run on Microsoft SQL Server on the back end.

"The SQL server runs well; it's a solid product. There's no business case to change that," Frantz says.

But function by function, AWC will rewrite all VIPS client software in Java 6.0 or higher so it can run at the front end on Apple Macs. VIPS currently runs client software on Windows XP, which AWC will not upgrade to the newer Vista operating system.

"From what I've observed, Windows Vista is the same [as XP], but with prettier icons and a little prettier user interface," Frantz says. "At the end of the day, our users are not going to do their work any differently with Vista than with Windows XP."

But it will take 12 to 18 months to rewrite the VIPS client software to run on Macintosh machines, and Frantz doesn't want to delay the cost savings and efficiency enhancements tied to the migration to Apple hardware. So in the interim, AWC will continue to run VIPS on Windows using software from Renton, Wash.-based Parallels Inc. that lets Macs run Windows applications in a virtual environment.

THE ROAD TO HERE

AWC's IT staff has been testing this configuration along with integrating Apple servers into its Windows-based network for the past four months.

"We began down this road independent of Apple," Frantz emphasizes. "We

AUTO WAREHOUSING CO.

[illegible] North America [illegible] the U.S. and Canada [illegible]

[illegible] Ford, Isuzu, Honda, [illegible] GM, DaimlerChrysler [illegible]

You run up against a series of go or no-go decisions when you're doing a proof of concept, but there seem to be no major barriers to stop the show.

bought some Apple gear and began to try to make it work on our own."

In late February, Frantz gave a MacBook Pro to senior programmer/analyst Robert Mullen with a simple directive. "Play with it for 30 days, and if at the end of the 30 days you don't like it, bring it back to me," Frantz recalls.

"I never went back," Mullen says. "And then I started begging for an Apple desktop."

Mullen also experimented with Linux as an operating system alternative to Windows. "I transitioned my full desktop from a Windows Vista enterprise desktop to a SUSE Linux desktop and was using the MacBook Pro as a laptop and SUSE Linux enterprise as my main desktop so we could see how well things worked," he explains.

In the end, system stability and available support were the deciding factors.

"We went out on the Linux boards to begin cultivating support, and the message we got back was that the Linux community would love to work with us and wanted to know how many man-hours of development we could put toward the overall Linux project," recalls Frantz. "That didn't give me a lot of confidence about Linux as the production environment for what we do."

Meanwhile, the Apple testing was going extremely well. On the storage front, "I got off the Microsoft file store we were using and moved everything to the Apple server, and it worked phenomenally," says Mike Collison, AWC's director of IS operations.

As for the VIPS application, Frantz says, "Windows on my Mac runs faster than any PC I've ever seen. It's blazingly fast. One of the main things that

Continued on page 30

Biting the Apple: Temptation Follows Disenchantment

AWC CIO Dale Frantz's disenchantment with Microsoft dates back to spring of 2006, when Janet Lawless, a Microsoft manager, notified Frantz that AWC appeared to be licensed improperly.

Confident that there was a mistake, Frantz informed Lawless that he keeps extensive records of all software purchases, licenses and registration codes. Lawless, in turn, threatened to turn up the heat and notify a company officer at AWC of her suspicions.

That's when Frantz – who is so passionate about accurate software licensing that he made it a condition of employment when he took the job at AWC nearly 10 years ago – contacted AWC's attorney. As it turned out, Lawless was trying to sell consulting services to AWC by misleading and intimidating Frantz. After this story was reported in *Computerworld*, Frantz says the hounding abruptly stopped.

The entire episode left Frantz with bad feelings toward Microsoft. But that's not the primary reason he started exploring software alternatives and ultimately opted to switch to Apple, he says.

Other key factors in his decision include the ever-rising costs of Microsoft's Windows operating system software upgrades, Windows security vulnerabilities and, most important, the need to safeguard systems availability, since AWC depends on a single monolithic application – VIPS – for virtually all of its revenue-generating activities.

Frantz notes that he always has been especially leery of so-called phone-home capabilities in Microsoft software when it is purchased under an open licensing agreement with the vendor. That feature is a built-in trigger that shuts down the software if a user is out of compliance, Frantz says.

"If all of a sudden, all of the computers directing traffic for our jobs went down because the computers couldn't talk to Redmond, that's just terrifying," he says. "I don't want Microsoft to have that degree of control over my business."

– JULIA KING

In IT, the wrong metrics could be

worse than no metrics at all.

Not sure how your IT investments measure up? You're not alone. Despite studies that show a critical connection between the right success metrics and higher performing businesses, most CIOs still wrestle with measurement processes that are unreliable at best, and misleading at worst. To see how Accenture Technology Consulting can help you measure and enhance the value of IT, visit accenture.com/technology.

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Continued from page 28

stunned me is just how well the Mac hardware runs Windows."

On the whole, "what we're finding is this stuff just works," says Frantz. "We're at a point where we can deploy it" companywide.

In his own spacious office, Frantz has a PC running Vista stowed on a back table. "It's pretty, but from a pure functionality point of view, I'm not using it any differently than I'm using Windows XP," he says. So front and center on his desk is a 20-in. Apple iMac running XP in virtual mode.

NO STAFF LEFT BEHIND

AWC's 16 IT employees have also been training on the Apple hardware and operating system. Frantz emphasizes that he has no plans to change people because AWC is changing technology.

"We are not intending to leave anyone in the [IT] department behind as part of this development project. We're going to be very, very careful as we step forward that we do everything to bring everyone along," he says.

"These folks have dealt with Windows-based PCs and servers for their entire careers," notes Collison. "But now, all of our techs are using Mac PowerBook Pros to support the enterprise. It's a fairly fast learning curve."

The group has worked out a series of early integration glitches, including streamlining virtual private network connections and integrating firewall software.

Collison recalls a time when WatchGuard Technologies Inc.'s firewall software had "hung" and was snagging all access to AWC's VPN. Using a MacBookPro and VPN Tracker software from Equinux USA Inc., the network manager logged on and solved the problem in minutes. "He got it restarted, and everything was good," Collison says. "It was poetry."

"You run up against a series of go or no-go decisions when you're doing a proof of concept," adds Mullen. "But there seem to be no major barriers to stop the show."

Ironically, "where it gets fuzzy" is over the issue of licensing, says Frantz, who is meticulous about licensing records and software compliance. The question, he says, is, "What do you need to be legal if you're running Windows XP in a virtual environment on Mac hardware?

"We are running a copy of XP, so Microsoft deserves revenue for that," Frantz acknowledges. "It's just that it's in a virtual workspace, so how do you handle the virtual workspace?"

A potential solution is to purchase and apply OEM licenses for Windows XP. This should allow AWC to legally run XP in a virtual environment on Mac hardware, according to the Microsoft OEM System Builder License that comes with Windows XP Professional software, Frantz says.

Still, to be sure, Frantz says he called Microsoft twice in May, requesting clarification on the licensing issue, but he has yet to receive a call back from the vendor.

Microsoft declined to answer questions for this story about licensing Windows to run in a virtual environment. After several requests, the vendor, through its public relations firm, referred customers to a Web site: *www.microsoftvolumelicensing.com.*

Pressed for more, it offered this statement: "Microsoft has reassessed the Windows virtualization policy and decided that we will maintain the original policy announced last fall."

As Gartner's Silver sees it, another potentially fuzzy area is the return on investment that AWC can expect by switching from PCs and Windows to Apple hardware and its Mac OS X operating system. "I'm skeptical about the ROI and how much it will cost in the end," says Silver.

IPHONE CONNECTION One "unexpected but incredibly cool" surprise is how AWC's Web-based VIPS application works on an iPhone, says CIO Dale Frantz. **computerworld.com/mac**

"Running Windows on a Mac is the most expensive way to run Windows," he notes. "You have to buy the Parallels software, buy more memory and buy a Windows XP license. It's not an inexpensive way to do things."

But Frantz is crystal clear on the issue: "This is more of a strategic choice for the future. If we look toward a return on investment to Windows Vista, there is no direct return other than we continue business the way we always have. By investing in the Apple platform, we pick up additional functionality that we don't have today." ■

While the Code Is Cooking

Parallels Inc.'s Parallels Desktop is virtualization software. It lets users boot one operating system and simultaneously run a second one as a "guest." AWC has been testing Parallel's new coherence technology, which lets Windows applications run as if they were native to the Mac. The retail price for Parallels is $79 per desktop.

While IT staffers at AWC are rewriting the company's main VIPS application in Java, Parallels Desktop will enable the company to boot Apple's OS X operating system on Intel Macs and run Windows XP as the guest.

"In coherence mode, everything looks exactly as it does in the Windows environment, but the underlying OS is the Mac," says AWC CIO Dale Frantz. "That's what attracted me. For the people on our shop floor, this doesn't look any different at all."

In testing so far, "our experience has been flawless," says senior programmer/analyst Robert Mullen. "But I would imagine that as we stress the system and associates on the floor use it, things will come up."

Running a second operating system in a virtual environment raises licensing issues that have yet to be definitively settled, so Parallels recommends that users running its software buy a full retail copy of Windows.

– JULIA KING

Continued from page 28

stunned me is just how well the Mac hardware runs Windows."

On the whole, "what we're finding is this stuff just works," says Frantz. "We're at a point where we can deploy it" companywide.

In his own spacious office, Frantz has a PC running Vista stowed on a back table. "It's pretty, but from a pure functionality point of view, I'm not using it any differently than I'm using Windows XP," he says. So front and center on his desk is a 20-in. Apple iMac running XP in virtual mode.

NO STAFF LEFT BEHIND

AWC's 16 IT employees have also been training on the Apple hardware and operating system. Frantz emphasizes that he has no plans to change people because AWC is changing technology.

"We are not intending to leave anyone in the [IT] department behind as part of this development project. We're going to be very, very careful as we step forward that we do everything to bring everyone along," he says.

"These folks have dealt with Windows-based PCs and servers for their entire careers," notes Collison. "But now, all of our techs are using Mac PowerBook Pros to support the enterprise. It's a fairly fast learning curve."

The group has worked out a series of early integration glitches, including streamlining virtual private network connections and integrating firewall software.

Collison recalls a time when WatchGuard Technologies Inc.'s firewall software had "hung" and was snagging all access to AWC's VPN. Using a MacBookPro and VPN Tracker software from Equinux USA Inc., the network manager logged on and solved the problem in minutes. "He got it restarted, and everything was good," Collison says. "It was poetry."

THE TECHNOLOGY PLAN

VIPS, the monolithic client/server system that runs most of AWC's revenue-generating operations, was developed in Sybase Inc.'s PowerBuilder in the late 1980s. It will be redesigned, function by function, and written in Java 6.0 or higher to run in native mode on Apple hardware

VIPS client software now runs on Microsoft Windows XP on Intel-based PCs. For the next 12 to 18 months, it will run on Intel-based Apple Macs running Windows XP in virtual mode, enabled by virtualization software from Parallels Inc. Once rewritten in Java, VIPS will run in native mode on Macs, eliminating the need for Parallels software.

VIPS's server software will continue to be Microsoft SQL and Windows Server, running on Hewlett-Packard Co. servers. But AWC will consider replacing the HP servers with Apple Xserve servers running server virtualization software from Parallels

AWC will still use Microsoft Exchange as its e-mail software

– JULIA KING

"You run up against a series of go or no-go decisions when you're doing a proof of concept," adds Mullen. "But there seem to be no major barriers to stop the show."

Ironically, "where it gets fuzzy" is over the issue of licensing, says Frantz, who is meticulous about licensing records and software compliance. The question, he says, is, "What do you need to be legal if you're running Windows XP in a virtual environment on Mac hardware?

"We are running a copy of XP, so Microsoft deserves revenue for that," Frantz acknowledges. "It's just that it's in a virtual workspace, so how do you handle the virtual workspace?"

A potential solution is to purchase and apply OEM licenses for Windows XP. This should allow AWC to legally run XP in a virtual environment on Mac hardware, according to the Microsoft OEM System Builder License that comes with Windows XP Professional software, Frantz says.

Still, to be sure, Frantz says he called Microsoft twice in May, requesting clarification on the licensing issue, but he has yet to receive a call back from the vendor.

Microsoft declined to answer questions for this story about licensing Windows to run in a virtual environment. After several requests, the vendor, through its public relations firm, referred customers to a Web site: *www.microsoftvolumelicensing.com.*

Pressed for more, it offered this statement: "Microsoft has reassessed the Windows virtualization policy and decided that we will maintain the original policy announced last fall."

As Gartner's Silver sees it, another potentially fuzzy area is the return on investment that AWC can expect by switching from PCs and Windows to Apple hardware and its Mac OS X operating system. "I'm skeptical about the ROI and how much it will cost in the end," says Silver.

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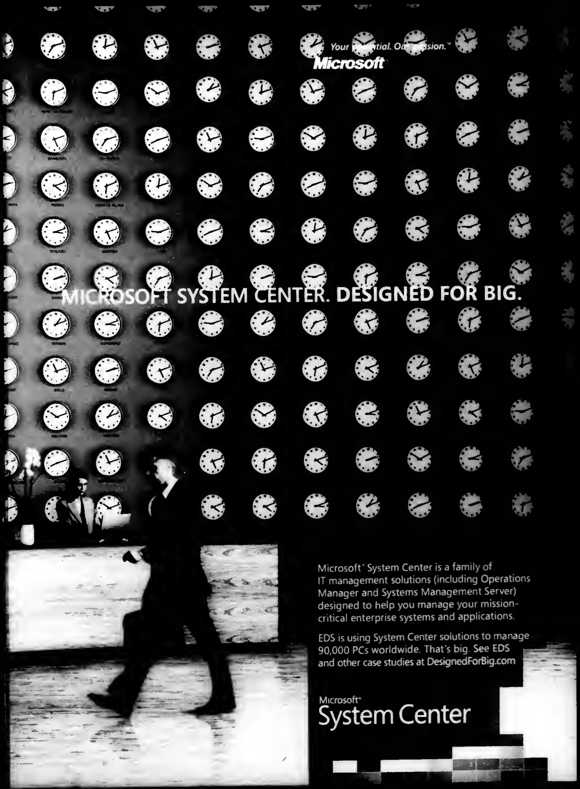
iPHONE CONNECTION
One "unexpected but incredibly cool" surprise is how AWC's Web-based VIPS application works on an iPhone, says CIO Dale Frantz.
computerworld.com/mac

"Running Windows on a Mac is the most expensive way to run Windows," he notes. "You have to buy the Parallels software, buy more memory and buy a Windows XP license. It's not an inexpensive way to do things."

But Frantz is crystal clear on the issue: "This is more of a strategic choice for the future. If we look toward a return on investment to Windows Vista, there is no direct return other than we continue business the way we always have. By investing in the Apple platform, we pick up additional functionality that we don't have today." ■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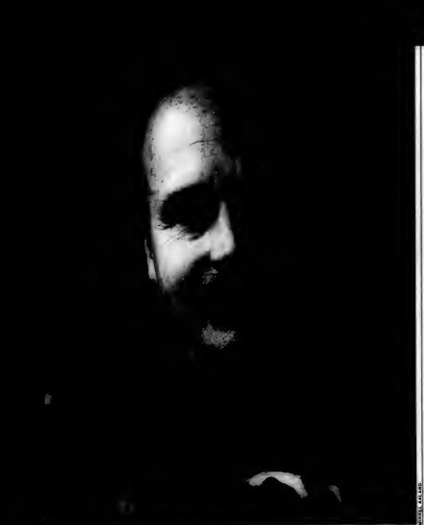


MIKKEL AALAND

The Future Really Is Now

Forecaster **Paul Saffo** explains how to recognize it when you see it.

"Silicon Valley is littered with the corpses of companies who mistook a clear view for a short distance," says **Paul Saffo** *in this month's* Harvard Business Review. *Even when you see a change coming, it's difficult to estimate how quickly it will arrive, Saffo says, but understanding forecasting can help you turn uncertainty into opportunity. Saffo* (www.saffo.com)*, a veteran forecaster who explores the impact of long-term technological change on society, shared some of the tricks of the trade with Kathleen Melymuka.*

> **"One of the secrets in my business is that everything changes slower than people imagine.**

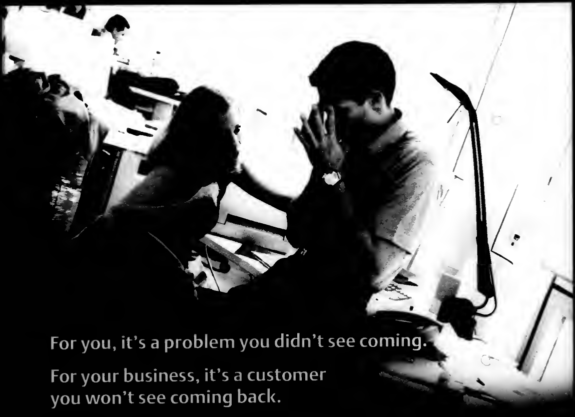
What is forecasting, and how does it differ from predicting? Predicting is about certainty, and forecasting is about appreciating uncertainty. Forecasting gives a context for decision-makers to act in the face of uncertainty. In the business world, uncertainty is our friend, because uncertainty is opportunity.

Why should a CIO care about forecasting? Forecasting is more important than ever for CIOs today because the CIO job function is central to enabling the corporate strategy, and the underlying tools that CIOs use are changing at the rate of Moore's Law. CIOs live in the eye of the hurricane.

What is the role of intuition in forecasting? When you're making a decision, it's very, very rare that you can have 100% of the information. If you wait until you do, that opportunity will have passed. So any strategic decision is going to require action before all the information is available, and it will require an intuitive leap. It's folly to rely on blind intuition, but forecasting makes your intuition informed intuition.

What is the cone of uncertainty, and how do you use it in forecasting? It's a way of thinking about what lies ahead. You've seen it on the weather map: They draw a cone showing all the places a storm could go. It's also the cone of possibility: the space that encompasses all the possible outcomes that could unfold from some present moment. I think it's a good visual aid. It forces

Continued on page 34



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Continued from page 32

me to make sure I've accounted for all possible outcomes. That's the essential step in forecasting.

What are wild cards, and why are they so difficult to read? A wild card is a trend or event that has either a very low probability — less than 15% — or a likelihood of occurring that you simply cannot quantify. Right now, an interesting wild card in IT is quantum computing: How quickly does it arrive? It's coming eventually, but is it a decade or two off? What if it happens in the next two to three years? It would completely negate all the advantages of public-key cryptography. There would be no secrets. The impact would be huge.

Tell me about S curves. Humans are linear thinkers, but almost everything interesting in life is nonlinear and follows an S-shaped pattern. Television, PCs, use of the Internet — all had S-shaped adoption curves. CIOs have been surfing the mother of all S curves: Moore's Law. The key question is, where on the S curve are we?

What are the common mistakes in forecasting S curves? The most common is to assume it's a hockey stick [shape]. But things do not go up forever. Eventually there's a leveling off, and then the curve starts going downward. Knowing when the S curve is topping out is essential because you have to jump to another platform, and usually what will replace the old order is inferior when it first comes out. You have to make a tough choice about how long to hang on to legacy and when to jump, without being too early or too late.

What are some other mistakes with S curves? Everybody obsesses on the inflection point because that's how to make money. But if you want to understand the inflection point, pay attention to the long, flat line to the left of it. One of the secrets in my business is that everything changes slower than people imagine. Change only seems fast because people overlook the antecedents. Most ideas take 20 years to become overnight successes. The Internet was almost 20 years old in 1988 when Al Gore "invented" it. If something has been tried a million times and it's never caught on, and it's about 20 years old and everybody's dismissed it, pay close attention: It may surprise you.

How do you spot an emerging S curve? Look for little hints of things in the zeitgeist that don't quite fit — that seem odd but might be whispering about the future. When you see them stringing together, you realize they're beginning to form that flat part of the S curve. An example: the Roomba, the little vacuum robot. People are very attached to it. I had friends who were as excited about the Roomba as they were with the original 128K Mac. Also, iRobot [the maker] says that two-thirds of Roomba owners give them names, and one-third admit to having taken them on vacation with them. This is about something much deeper than clean floors.

for
Effective Forecasting

Define a cone of uncertainty

Look for the S curve

Embrace the things that don't fit.

Hold strong opinions weakly

Look back twice as far as you look forward.

Know when not to make a forecast.

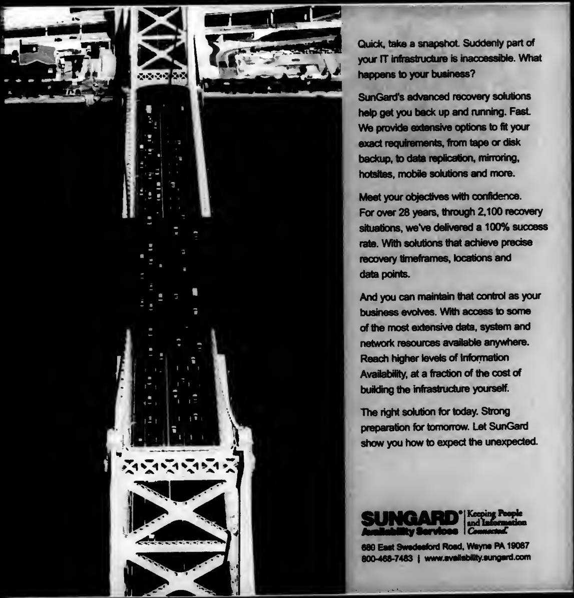
What do you see coming next? There's a wave building on the horizon because of sensors. Sensors are putting eyes, ears and sensory organization on computers and asking them to observe and manipulate the physical world on our behalf. And the poster child for sensors pretty clearly is going to be robots. Just as people were surprised and astonished by the PC in the '80s and the World Wide Web in the '90s, in a couple years — maybe as soon as five years, but probably longer — people will be amazed by arrival of the ubiquitous robot. So I'd say to CIOs: Look at sensors really closely. In 10 years, most of your information won't be generated by people; it will come from sensors.

What are the right ways and the wrong ways to use the past to forecast the future? Mark Twain is credited with the observation — though he didn't say it — that history doesn't repeat itself but sometimes it rhymes. The shape of S curves is remarkably similar over time: 20 years to an overnight success. There are deep underlying currents that are the same because the biggest thing that never changes is human nature. There's always the same resistance to change. So the rearview mirror is the most important forecast tool you have. But you have to look back twice as far as you're looking forward so you will capture the hints of the cycle that is unfolding. All CIOs should be historians of IT.

What would they learn? I think they'd learn that the information revolution is over. *Information* was a word that made sense in an age when we didn't have much information. But when it goes deep and becomes ubiquitous, it ceases to be information and it becomes media. Here's what's going on: If you look back to the 1950s, with the advent of TV, that was a mass-media revolution. We're going through it again with the Web, the Internet, information appliances, podcasts; but this is a personal media revolution. Google is a personal media company, not an information company. Blogging is a personal medium. Mass media is over; personal media is everything, and it's fundamentally affecting the IT landscape. That's why executives in traditional mass-media companies are going through all sorts of uncertainty. ■

> **“ Mass media is over; personal media is everything, and it's fundamentally affecting the IT landscape.**

HOW TO EXPECT THE UNEXPECTED



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Back to Basics: Code

Building computers isn't so hard, but making them work is something else again.

By Gary Anthes

"We but teach bloody instructions, which being taught, return to plague the inventor."
— **Macbeth**

FEW DISTINCTIONS in computer technology are as clear as the one between hardware and software. But it was not always so.

The term *software* first appeared in 1958, more than 10 years after the emergence of the first automatic, programmable digital computers. In the very early years — the 1940s — instructions to the adders, multipliers and logic gates of computers came from wires plugged into boards and physical switches set laboriously for each application. Or they were delivered by paper tape, the way Grace Hopper programmed the Harvard Mark I computer in 1944. With those "programs," instructions resided outside the computer.

Then, in 1945, Alan Turing, John von Neumann and others had a better idea — one that would fundamentally change computer architectures forever. Their idea was to store the program inside the computer and to put it in the same place as the data. This "stored program" architecture allowed software to be changed as easily as data, without anyone having to manipulate wires or switches or punch a new paper tape.

The earliest software was written in binary notation — long strings of zeros and ones — but it was hard for programmers to recognize and remember instructions made up of 16 binary digits. So higher-level notations, called assembly languages, were invented. They substituted short mnemonics for the long binary strings.

Assemblers worked at low levels of abstraction, mostly translating the mnemonics into machine language instructions one-for-one, so the programmer still had to worry about machine constructs such as memory locations and registers. But they allowed programmers to give memory locations meaningful English names. An assembly instruction "B Loop" might tell the program to "branch" (transfer control) to the instruction at the memory location labeled "Loop."

But that was still pretty tedious. Moreover, assembly language programs could not be ported across computers with different hardware architectures.

The solution to those problems came in the mid-1950s in the form of higher-level languages — most notably Fortran and Cobol — and their compilers (see box, next page).

Unlike assemblers, compilers generated multiple machine-language instructions for every "source" statement written by the programmer. Compilers (themselves programs) were smart enough to flag certain kinds of errors in source code, and they could automatically generate the code required to do various housekeeping chores, like keeping track of memory locations and the indexes used in loops.

> **"The pain of producing code has not been eased.**
>
> **BERNARD CHAZELLE,**
> COMPUTER SCIENCE PROFESSOR, PRINCETON UNIVERSITY

PORTABLE CODE

With these higher-level languages, programmers had to know little or nothing about the hardware their programs would run on. As a consequence, source programs became widely portable across computer types for the first time. That gave rise to the creation of open-source libraries of reusable software.

In a scant 10 years, then, it was all worked out. We got the stored-program architecture, high-level programming languages and portable code — mainstays of 21st century computing.

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BINARY BASICS
For a primer on binary logic, search our Web site using the keywords "binary basics."

So, what have software engineers been doing for the past 50 years?

They have made further advancements, of course, such as the development of object-oriented languages, which are tailored for specific application domains and methods — spreadsheets and database queries — for "programming" without programming languages.

But progress has slowed since the 1950s. "Perhaps the biggest disappointment in computer science has been the slow development

Fortran

Fortran (formula translator) was developed by IBM in the mid-1950s. Its notation was meant to approximate mathematical notation, and it became the language of choice for scientific and engineering applications.

CODE	TRANSLATION
IF (X .LT.0) THEN	If the current value of *x* is less than 0, then . . .
Y1 = SIN(X+2)	. . . compute the sine of the variable (*x* plus 2) and store the result in the variable *y1*.

Cobol

Cobol (common business-oriented language) was developed in 1959 by an industry-university-government group drawing on earlier work by Grace Hopper.

CODE	TRANSLATION
OPEN INPUT PAYROLL-FILE, OUTPUT CHECK-FILE, REGISTER-FILE.	Open the file containing payroll records and the output files for check images and the check register.
PERFORM CHECK-WRITE UNTIL EOF-SW = 1.	Perform the routine CHECK-WRITE (defined elsewhere in the program) repeatedly (for each employee) until the end of the file is reached.
CLOSE PAYROLL-FILE, CHECK-FILE, REGISTER-FILE.	Close the input and output files.

Assembly

CODE		TRANSLATION
BALR	3,0	Load Register 3 with the base address for the program ("branch and link register").
USING	*,3	Use Register 3 as a base register.
MVC	HDGOUT, HDGSAVE	Move (copy) the contents of the memory location labeled HDGSAVE into the memory location labeled HDGOUT.

of software engineering," says Bernard Chazelle, a computer science professor at Princeton University. "There was this thing called 'automatic programming' in the '70s — a hot field if there ever was one — but that has died out. It was the idea that you'd talk to your computer to tell it what to do, and it would program itself.

"The pain of producing code has not been eased," Chazelle says. "It's tempting to say it will improve greatly soon, but then it's tempting to say that a cure for the common cold will soon be found." ■

Richard Feynman: Renaissance IT Guy

SCIENTISTS designing the atomic bomb at Los Alamos National Laboratory in the 1940s used desktop Marchant mechanical calculators to perform the computations they needed.

But those proved to be insufficient to meet punishing wartime deadlines, and Richard Feynman, a 26-year-old physicist who would later win a Nobel Prize, came up with a method for "mass-production calculating," as he calls it in the book *Classic Feynman* (W.W. Norton, 2005).

"We set up a room with girls in it," Feynman recalls in the politically incorrect parlance of the day. "Each one had a Marchant. But one girl was the multiplier, and another was the adder. Another one cubed; all she did was cube a number on an index card and send it to the next girl."

Shortly thereafter, Los Alamos replaced the "girls" and their calculators with IBM punched-card "computers." Feynman's team discovered a way to break what had been a long serial process into pieces - each with its own color-coded cards. That enabled workers to isolate errors so that only a small bunch of cards had to be reprocessed when an error occurred. And it allowed some steps to be run in parallel, greatly reducing runtimes.

So Feynman came up with clever processing algorithms and instructed his machines to carry them out - a pretty good definition of what programmers do today.

He saw a bottleneck in manual labor and solved it by automating the processing of information. He took a complex set of interrelated operations and broke them into small components. He helped debug the process by simplifying error correction. And, using an approach that presaged by many years the rise of parallel computing, Feynman found a way to turn a sequential process into multiple processes running simultaneously.

Not bad for 1944.

- GARY ANTHES

■ SECURITY MANAGER'S JOURNAL | MATHIAS THURMAN

Getting the Word Out About DRM

Top execs will be the first to use **Microsoft DRM technology**. So, what could go wrong? **Best not to find out.**

Trouble Ticket

ISSUE: Before rolling out digital rights management technology to top executives, you need to make sure they fully understand the implications.

ACTION PLAN: Communicate effectively with all the right people.

AFTER months of preparation, I got the OK to go live with my digital rights management (DRM) project this past week.

The final hurdle to deploying Microsoft Rights Management Service (RMS) was a new step in the project management process, called operational readiness. (My past columns explaining why we need DRM and why we chose RMS can be found online.) This step was mandated by our CIO after he learned that several critical business applications weren't being monitored for performance and capacity. When employees are being kept from conducting revenue-generating work, the CIO is going to step in. Operational readiness requires each functional group to literally sign off on the readiness of projects, from support and maintenance to monitoring and documentation. Another aspect of this directive is that managers have a chance to ask questions before they're saddled with using new applications and infrastructure.

The operational readiness sign-off for RMS went off without a hitch. I had every piece of support documentation in place, including a backup plan and end-user instructions. I even had the support team create a Web-based form so the help desk would have relevant information easily at hand. I got all the signatures needed, and then I sat down with the CIO.

I needed to ensure that he was ready to get the executive acceptance we will need to roll out RMS to the initial users we're targeting at the director level and above. I asked him whether he knew what he was signing up for. After all, users who aren't fully aware of how RMS works may be locked out of critical business documents. And when one of those users is the CEO, you don't want to take any chances.

■ When a new technology could lock the CEO out of critical documents, you don't want to take any chances.

POTENTIAL TROUBLE

For example, if the CFO sends a protected document to the CEO, the chief executive is going to have to recognize what it is and deal with it properly. In order to open it, he'll have to be logged into the corporate domain so that the RMS client can talk to the server and obtain the proper credentials. (Reopening it is easier, because the credentials are cached, so there is no need to be connected.) If the CEO doesn't understand these implications of receiving an RMS-protected document, and he then gets on a plane heading to China, hoping to spend the 18-hour flight using that document from the CFO to prepare for a meeting, he is likely to take it out on our CIO for deploying technology that kept him from essential work.

With all this in mind, the CIO and I decided to craft two e-mails explaining the implementation of RMS. The first e-mail went out to everyone at the director level and above, as well as to their administrative assistants. The second, from the CIO, went only to the CEO and CFO.

Was it enough? Well, more than a week after our initial RMS deployment, we have approximately 50 employees using the tool. I've been keeping track, and so far, only three support calls have been logged. And there have been no calls from 35,000 feet. ■

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*This week's journal is written by a real security manager, **"Mathias Thurman,"** whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com.*

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■ OPINION

Paul Glen

You Can't Outsource Retention

"EXCUSE ME?" I said to my new boss with barely concealed incredulity.

"You shouldn't thank your people for just doing their jobs. That's what the paycheck is for."

Had I really just been admonished for thanking a member of my staff for doing a good job? I suddenly understood at least part of the reason for our dismal employee retention.

The group that I had just taken over had lost more than 10% of its members in a couple of weeks, and I was afraid that we weren't through yet.

When I accepted the assignment, I knew that my boss wasn't known as a "warm and fuzzy" manager. We had very different management styles and philosophies, but this latest directive seemed to cross the line between idiosyncratic and mean.

That was probably the first time I had to think carefully about employee retention.

During the dot-com boom, retention was a big topic, but for the past few years, I haven't heard much about it. Now it's back. The job market has improved, and power is shifting away from managers and toward staffs, so retaining employees is back on managers' minds.

Not surprisingly, people seem to be dusting off the same old ideas, many of which I don't find all that instructive. One recent book listed categories of retention strategies that seem utterly typical to me:

1. Organizational strategies
2. Orientation and onboarding
3. Communication and connection
4. Career and development
5. Reward and recognition
6. Benefits
7. Capturing employee suggestions

I'm not trying to knock this book, but it's one of many that show how conventional wisdom on this misses the point.

Notice that this is a list of things *that a human resources department can* do to try to keep employees.

At the root of the problem is that managers and HR departments seem to agree that retention should be handled by HR. HR wants to grapple with this issue and managers don't, so the agreement is convenient for everyone — except the employees and, ultimately, the company.

■ I don't usually hear that people leave a company because of bad HR policy.

I don't think that HR is capable of dealing with this — not as a matter of competence, but because of the managerial instruments at its control.

There are two general categories of forces that operate in employee retention: engagement and coercion. Engagement occurs when an employee connects emotionally with his work. Coercion occurs when forces outside the employee encourage either attachment to or disengagement from an employer.

Policy is always about compliance or coercion. HR comes up with policies because some regulatory agency requires it to or because it wants to persuade employees to behave in desired ways. This is not necessarily bad. Incentives can be good, but they are instruments of coercion.

HR creates programs and sets policy. The book's list is a good example of things that HR can do, but I don't usually hear that people leave a company because of bad HR policy: "Gosh, I love my boss, my work and my co-workers, but the incentive plan was so odious that I quit."

Engaged people pay only passing attention to coercion, unless it is truly obnoxious. Disengaged people pay a lot of attention to coercion and usually resent it.

Policy can't enhance engagement, but it can diminish it. External incentives can't make people engage their creativity, but they can tick people off.

Engagement is created on the ground, not at the organizational level. Front-line managers have a lot to do with whether the members of their groups are engaged. Good managers help people stay engaged; bad ones push them toward disengagement.

The goals of policy should be to do no harm and to encourage the development of leadership skills in front-line managers who can make a difference. ■

Paul Glen *is the founder of the GeekLeaders.com Web community and the author of* Leading Geeks: How to Manage and Lead People Who Deliver Technology *(Jossey-Bass, 2003). Contact him at info@paulglen.com.*

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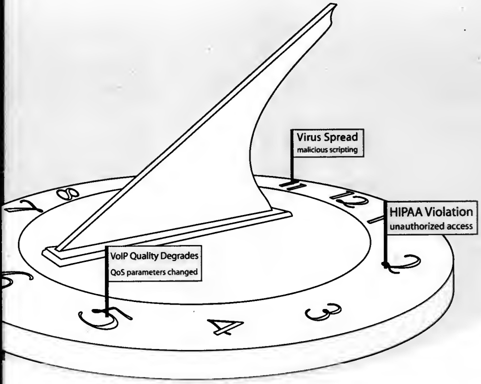

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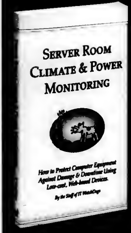
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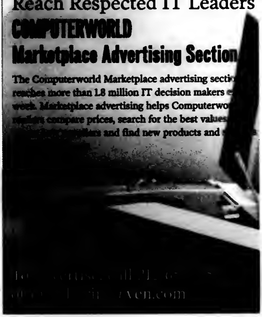

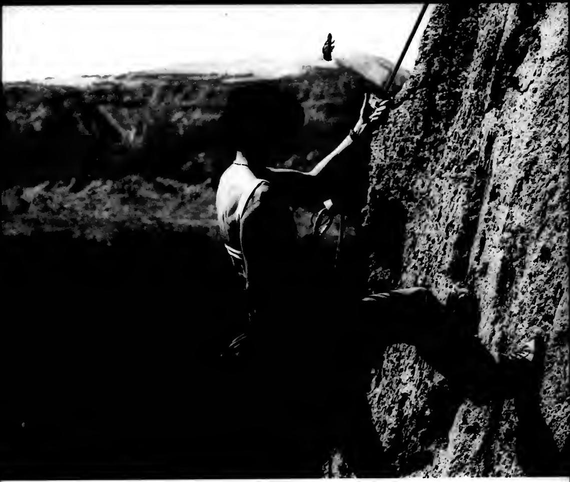

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TOO MANY CHIEFS

If you've been working for one company for a while and your title hasn't changed to chief architect, say, or you aren't yet chief security officer, chief technology officer, or chief cook and bottle washer, you may be behind the curve – the curve of title inflation, that is. Wharton Business School's "Knowledge@Wharton" online publication asked various faculty members in May to comment on a trend in flattened organizations to give some employees a boost by handing out titles like chief privacy officer, chief cultural officer, chief geek, chief apology officer and chief receptionist.

According to **Peter Cappelli**, director of Wharton's Center for Human Resources, companies that don't have enough titles that are significant-sounding are generating new ones as a reward. Title inflation can even hit at the hiring stage, he says, because "it's easy to offer a potential employee a title that he or she asks for if it means he will come on board." Wharton marketing professor **George Day**'s take is that some chief titles are meant to emphasize the importance of an initiative or a function within the organization.

Betsey Stevenson, a professor of business and public policy, says she thinks that the employees who are pushing for C-level titles may be "the same ones who, as students, pushed for A's and caused grade inflation. Now they are making it into the corporate world, and they want big titles."

The question that hangs over this discussion: When everyone has an important-sounding title, is anyone important?

– JAMIE ECKLE

PAGE COMPILED BY JAMIE ECKLE.

■ Q&A

Graham Doxey

The president of **Neumont University** in South Jordan, Utah, talks about the school's project-based curriculum for computer science.

How does Neumont's approach differ from traditional CS programs? We view the employer who will hire our graduates as our customer. Our campus and curriculum are designed to mirror the environment our students will experience in the workplace. The program is accelerated. Students are in the classroom from 8:00 to 4:00, Monday through Friday, and graduate in 24 months. It is also 70% project-based. That means students develop core competencies in computer science, along with vital team-leadership and collaboration skills, by building enterprise applications in small teams. We have re-engineered the traditional computer science curriculum, and our project-based program is mapped to 400 core competencies in computer science.

How do you measure the success of Neumont's approach? By our placement rates and the average starting salaries of our graduates, which are over $60,000 per year, 19% over the national average for new graduates in computer science.

Is Neumont changing the face of CS education at other schools? An academician once said, "It's easier to change the course of history than to change a course in history." Much is written about the shortage of high-end software development talent in the U.S. Universities are getting the message, but it will take years to change the core curriculum at most postsecondary institutions.

What are Neumont's plans for expansion? How many graduates do you expect to have in the workforce by 2010? Neumont was built to scale up. We expect to [have had] 2,000 graduates by 2010, making Neumont one of the largest graduates of students in computer science in the world. In fact, we just announced the launch of our new campus in Dulles, Va., which will be opening this summer.

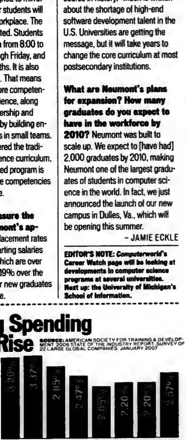
– JAMIE ECKLE

EDITOR'S NOTE: *Computerworld's* Career Watch page will be looking at developments in computer science programs at several universities. Next up: the University of Michigan's School of Information.

Training Spending On the Rise

SOURCE: AMERICAN SOCIETY FOR TRAINING & DEVELOPMENT 2006 STATE OF THE INDUSTRY REPORT, SURVEY OF 22 LARGE GLOBAL COMPANIES, JANUARY 2007

Still far short of the recent peak in 2000, average training expenditures as a percentage of payroll (excluding benefits and taxes) are inching back up.



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6 **Center for Creative Leadership,** U.S.

7 **Instituto de Empresa,** Spain

8 **Northwestern University's Kellogg School of Management,** U.S.

9 **IESE Business School,** Spain

10 **Babson Executive Education,** U.S.

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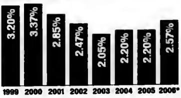

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TRUE TALES OF IT LIFE AS TOLD TO SHARKY

One Step Back

New on-site auditor is fresh out of college and following a script, says an IT pilot fish who isn't. "In discussing our security, he questioned whether the data center was 24/7," fish says. "I assured him that it was, but he wanted me to prove it. I showed him the operator schedule, but that wasn't enough. I pulled old time cards to prove that the operators worked when they were scheduled to work, but that wasn't enough. I offered to meet him in the data center at 4:00 the next morning and introduce him to the third-shift staff. He asked for copies of the operator schedule and time cards."

Details, Details

Sales guy sends IT pilot fish a message complaining that his e-mail program is automatically sending each message as soon as the spell checker has finished. "I cringe every time I see his name pop up," fish says, "because he has locked on to me as his IT resource, in spite of several conversations where I have pointed him toward those more appropriate. But I was happy that it was an e-mail message, because I'm not sure I could have kept a straight face as I explained how, if he stopped pressing the 'Send' button to spell-check a work in progress and instead used the 'spelling' tool, he would get the desired result."

Never Mind

This company uses a custom application that has run for years with occasional updates. But when the most recent upgrade arrives from the outside developer, there's a note attached: "During installation, two warning messages will appear regarding a 'sidebar.ocx' file. Just click 'Ignore' when these messages show up." Reports a pilot fish on the scene: "Needless to say, the 'fix' was backed off because several components failed to load when the program was run. A new version arrived two days later – without any accompanying error messages."

Um . . . No, It Won't

It's a typical Louisiana summer afternoon at this bank, with pop-up thunderstorms making the lights and power flicker. "I noticed that the girl in the teller window next to me kept hitting her teller machine monitor on its side," says a pilot fish at the branch. "I asked her what was going on. Was she having a problem? Between loud cracks of thunder and flashes of lightning, some of them loud and bright enough to scare us, she explained that her computer kept going off and on and she wanted it to stop, so she was hitting it to see if that would help."

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■ FRANKLY SPEAKING

Frank Hayes

Real Software Assurance

ABOUT ONE QUARTER of big Microsoft customers have had it with Software Assurance. That's according to Forrester analyst Julie Giera, who said in a report last week that along with the 25% who won't renew their maintenance contracts, another third haven't yet decided whether they'll stay with the program.

Why? Because right now, Software Assurance is for losers.

To be clear, Giera didn't use that word. She did describe more SA users than ever before as "in the 'mad as hell' category." And she said a major reason customers are angry is that they can join the program expecting to get an upgrade to the next version of a product, such as Windows or Office, then pay more than the cost of new licenses in maintenance fees and *still* get no upgrade because the product's schedule has slipped beyond the contract's window. (Think Vista and Office 2007.)

Microsoft disputes Giera's assessment, pointing out that it's based on a survey of only 63 big customers and doesn't match what the company is hearing from customers. Fair enough; with the margin of error for Giera's survey, the number of SA-dumpers might be as low as 12.4%. That's still a half-billion dollars in quarterly revenue Microsoft stands to lose.

Maybe Microsoft should be listening harder.

After all, SA should be a win-win deal. Microsoft gets a steady stream of maintenance revenue and locks customers in; if they jump ship, they'll be paying twice, because Microsoft already has their money. Customers get an easy-to-budget annual fee and — they expect — the next version of the product.

But that hasn't been happening. Microsoft's ever-slipping schedules have turned SA customers into losers who end up paying more than if they'd never been in the program. No wonder they're teed off.

■ Starting now, Microsoft should guarantee that Software Assurance customers will receive the upgrades they were originally scheduled to get.

Microsoft points out that customers get more than just upgrades with SA, including a bewildering array of niche technical services. But most customers don't care. The big-ticket item, the thing that justifies the cost to the CFO and CEO, is the upgrade. That's what customers are paying for, and that's what they're not getting.

It's time for Microsoft to turn this back into a winning proposition.

How? Microsoft can't cut SA prices; Wall Street won't stand for that kind of revenue drop. And short of adding full-blown technical support — very costly — throwing more features into SA won't make users happy.

But there is a way, one that doesn't have to cost Microsoft a nickel in legitimate revenue.

Starting now, Microsoft should guarantee that SA customers will receive the upgrades they were originally scheduled to get.

So when a customer signs a three-year SA contract, if a product is slated for release within three years, the customer will get the upgrade — no matter how many times the schedule slips.

That's the kind of assurance about software that customers want from this program. And it's what they should get. Not a guessing game about how long SA contracts should be. Not a gamble on what an upgrade will actually end up costing. Not a system that turns SA customers into losers every time Microsoft misses another product release date.

Sure, SA will still lock customers in. But it'll also let customers lock up the upgrade they expect, even if it doesn't arrive when they expect it.

That's a win-win — and one that could win back those customers for a program Microsoft can't afford to lose.

After all, it's called Software Assurance. And it's time for Microsoft to make it live up to that name. ■

Frank Hayes is Computerworld's *senior news columnist. Contact him at frank_hayes@computerworld.com.*

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